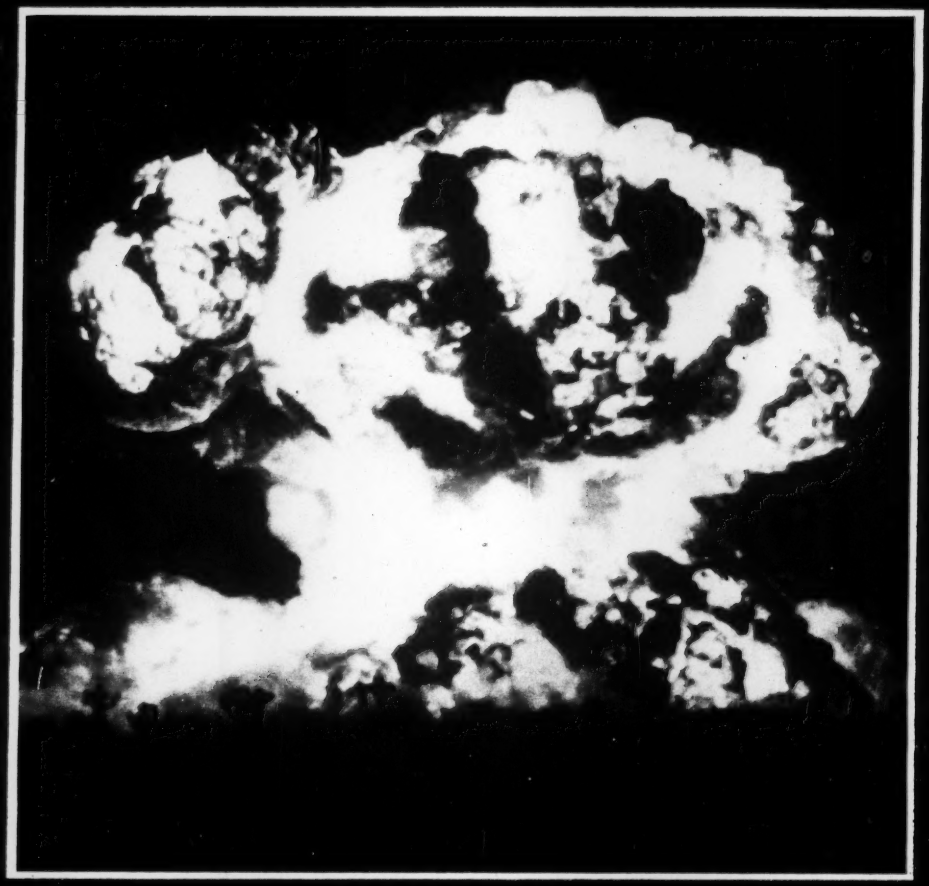
ENGINEERING NEWS-RECORD



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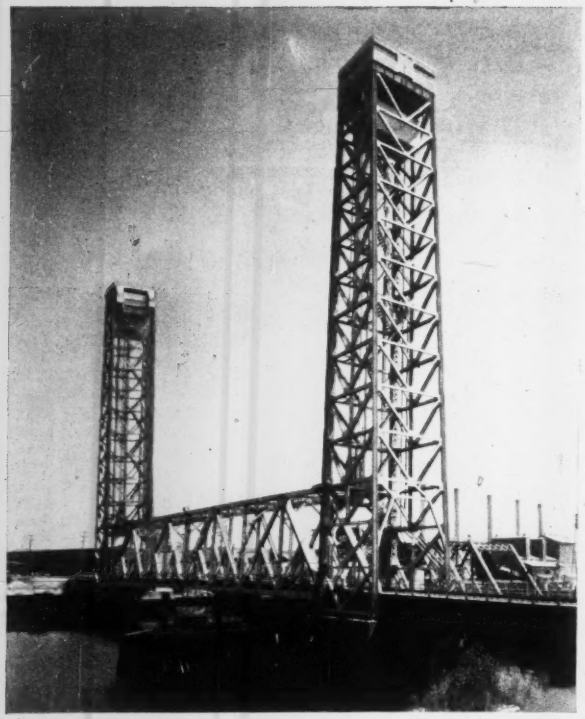
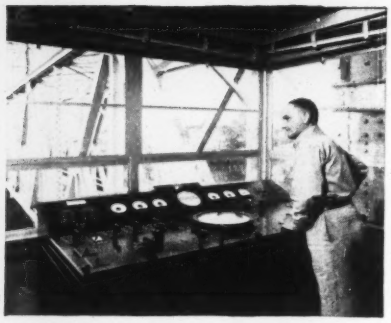
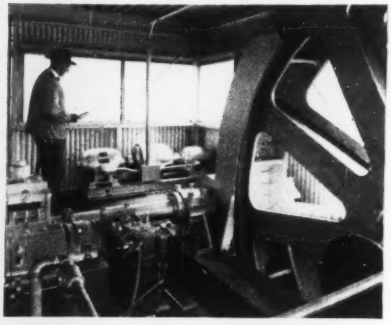


AMPLIDYNE CONTROL—first applied to movable bridges by G.E.—permits raising and lowering Oakland's new Fruitvale bridge in a shorter time than by any other method. Amplidyne control responds instantly, provides faster acceleration and deceleration.



BRIDGE OPERATION is centered in operator's console. Amplidyne's closer control keeps ends of span aligned during operation, "seats" bridge accurately and smoothly.



REDUCED STRESS ON BRIDGE structure and machinery results from torque limiting, inherent in amplidyne control. Photo shows part of G-E drive equipment in east tower.

Smooth, pinpoint control speeds bridge operation

G-E amplidyne-controlled drive prevents skewing, seats span faster, protects structure from shocks

Key to precise control, faster operation, and better equipment protection of Oakland's new Fruitvale Avenue Lift Bridge is its General Electric amplidyne-controlled drive system. Working closely with Woodruff & Sampson, consulting engineers for the Corps of Engineers, Judson Pacific–Murphy Corp., general contractors, and Enterprise Electric Works, electrical contractors, G.E. has again engineered the versatile amplidyne into an outstanding movable-bridge system.

This is but one example of the help G-E engineers can provide *your* engineers or consultants on installed equipment for heavy construction projects. Contact your G-E Apparatus Sales Office. General Electric Company, Schenectady 5, N. Y. 664-23

WORLD'S FIRST amplidyne-controlled lift bridge—pioneered by G.E.—is Stickel Memorial Bridge in New Jersey. Consulting engineers were Hardesty & Hanover.

Engineered Electrical Systems For Heavy Construction

GENERAL ELECTRIC

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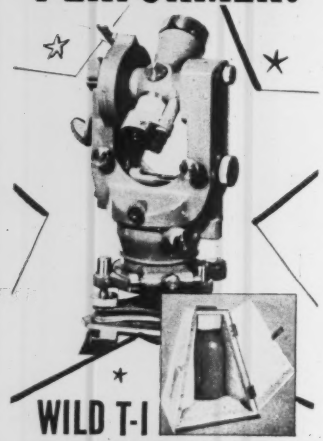

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Proven in service for 20 years under tough field conditions.

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ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 149 July 10, 1952 No. 2

WALDO G. BOWMAN
Editor

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ROBERT F. BOGER
Publisher

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How Much Water Will Your Community Demand 50 YEARS FROM NOW?

48" Prestressed Lock Joint Concrete Cylinder Pipe, Portion of 48" Main Feeder Line in the Long Beach Master Expansion Plan.

Will Your Present Main Water Supply Lines Meet This Demand?

WHO KNOWS? Your community planners and particularly your water engineers are faced with this practically unanswerable problem.

The growth of a city, town or village and the water demands that will be made in 10, 20 or 50 years are extremely hard to predict.

An interesting example of long-range planning is the program for enlarging the water system outlined by the Water Department planners and engineers of the City of Long Beach. A few years ago, realizing that the post-war years would bring a tremendous population gain in their area, these men planned a water system expansion program and went through with it. This expansion program for the City of Long Beach has already reached multi-million dollar proportions involving important footages of Lock Joint Concrete Cylinder Pipe, American Concrete Cylinder Pipe, and Lock Joint Prestressed Concrete Cylinder Pipe.

This long-range type of planning calls for reinforced concrete pressure pipe of superior design and lasting quality. The pipe manufactured by this Company . . . four different types of reinforced concrete pipe . . . is for use in *permanent* main water supply line projects.

LET OUR EXPERIENCE HELP YOU. Our fifty years of experience in the design and manufacture of reinforced concrete pressure pipe . . . and our continuing program of research and development in this field . . . are available in helping your community plan its water transmission projects wisely for the next 50 years, or even more. Furthermore, you can depend upon reinforced concrete pressure pipe to serve reliably and well for a period of time far beyond that for which you can forseeably plan today.

FOUR PLANTS TO SERVE YOU
American manufactures four classes of reinforced concrete pressure pipe in diameters ranging from 12 in. to 12 ft., and for all pressures related to modern American water works practice.

American
PIPE AND CONSTRUCTION CO.

5 TERRA COBRAS

SPEED OKLAHOMA TURNPIKE JOB for Smith, Odle & Smith

"Easiest Loading Machines we've used,"

says Eldon Smith, partner in Smith, Odle & Smith. In describing the dependable performance of the five rugged, big-capacity Terra Cobras on the Oklahoma Turnpike job, Smith also rated the machines as "the most economical on cable."

Pictured are Eldon Smith and Bob Odle, partners, and operator Thurman Owens with one of the five Terra Cobras used on the Oklahoma Turnpike job.

Smith, Odle & Smith had ample proof of Terra Cobra performance when they purchased their third Terra Cobra last November and two more early this year. Their first two Cobras were rushed in to finish moving 367,000 yards on Highway 66 last Summer, then roaded to the Oklahoma Turnpike where 850,000 yards were to be moved between September 15 and April 1. 600,000 yards of hard sandstone, shale and sand were assigned to the Cobras. By the time the full fleet of five went into action in February, each original Cobra had put in 1,500 hours. With work well ahead of schedule, typical job records showed the five big capacity 17.5 yard Cobras completing 4,000 foot cycles every 4½ minutes, averaging 750 pay yards of the tough material per hour, ten hours per day, six days per week. In spite of constant hard driving, a minimum of downtime was reported. Like Smith, Odle & Smith, you too can benefit from the recognized Terra Cobra features—faster loading and dumping—extra ruggedness—simplicity of design—easier maintenance. Let your Wooldridge Distributor help you get more production per hour plus more hours of production.

WOOLDRIDGE

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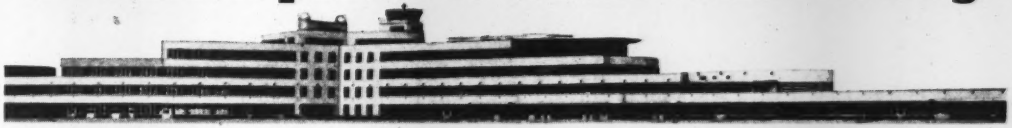
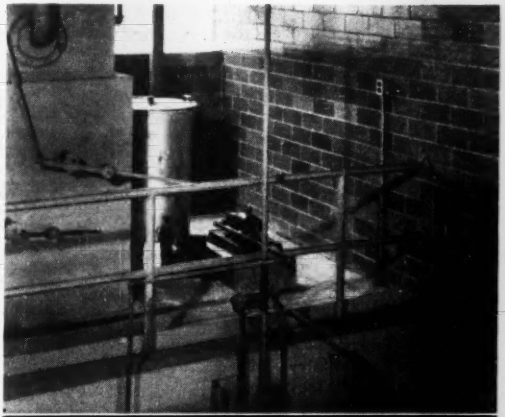
Terra Cobra | Terra Cobra Wagon | Power Control Unit | Scrapers | Rippers | Bulldozers

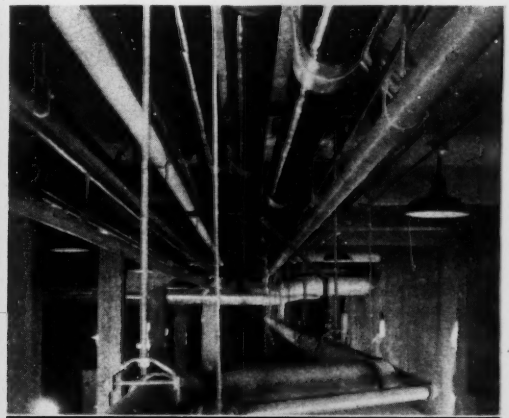
Dearborn provides water conditioning



for GREATER Pittsburgh airport



BOILER HOUSE—Dearborn 53HA Tank and Type "N" Pump for continuous feeding of Formula 702* to boiler feed lines to eliminate return line corrosion.



HOT AND CHILLED WATER RETURN LINES—Fiberglas covered with NO-OX-IDized Wrapper No. 4 completely insulates piping.

Larger than La Guardia Field and Washington's National Airport combined, the new Greater Pittsburgh Airport is now serving air-minded America. Architectural innovations in the design of the seven story terminal building will serve as an airport model for years to come. Dearborn is proud of its part, the development of a water treatment program and pipeline protection for costly heating and air conditioning equipment installed in this magnificent masterpiece.

Specialists in Industrial Water Treatment and Rust Prevention since 1887, Dearborn gives you a *complete* service (1) analysis of your requirements (2) the correct formulas and equipment to apply them (3) proper test control procedure. Take advantage of Dearborn experience on your next job . . . call in a Dearborn Engineer for consultation. Bulletins sent on request.

DEARBORN CHEMICAL COMPANY

Merchandise Mart Plaza • Chicago 54, Illinois

*U. S. PAT. 2400543

FLUOR COUNTERFLO AIR CONDITIONING TOWER—Water treated with Formula 846 eliminates scale and corrosion. Formula 517 is used in the closed section for the same purpose.

Dearborn Chemical Company, Dept. ENR
Merchandise Mart Plaza, Chicago 54, Ill.

- ☐ Send me Bulletin 5000 on Dearborn Industrial Water Treatment.
- ☐ Bulletin on NO-OX-ID Rust Preventives.
- ☐ Please have a Dearborn Sales Engineer call.

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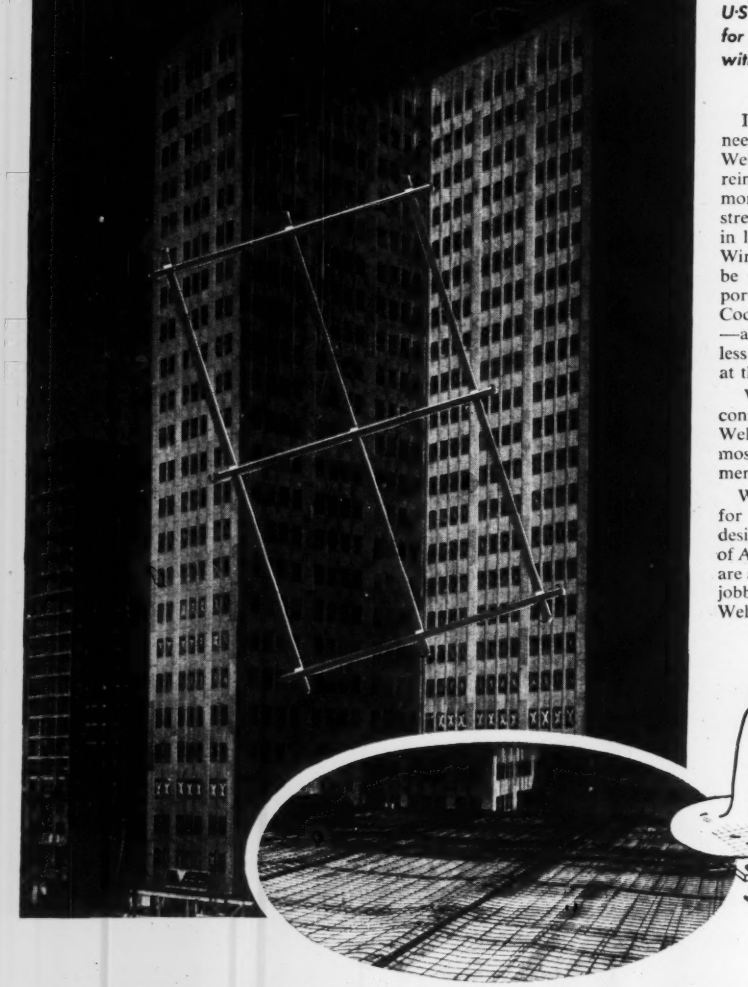
THE LEADER IN WATER TREATMENT AND RUST PREVENTIVES

BIG NEW BUILDINGS IN PITTSBURGH'S GATEWAY CENTER

Built stronger... to last longer

WITH AMERICAN WELDED WIRE FABRIC



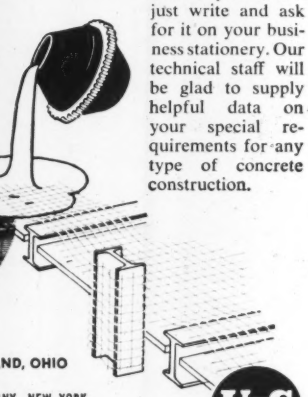
One of the most dramatic developments in city planning is the new Gateway Center in Pittsburgh's Golden Triangle. In these fine, modern buildings, acres and acres of short span concrete floors are reinforced with U·S·S American Welded Wire Fabric, for greater strength and longer life and with the use of less steel.

* * *

Important too, not as much steel was needed because of the use of American Welded Wire Fabric. Other types of reinforcing material require up to 28% more steel area for the same amount of strength. And don't forget the savings in labor — because American Welded Wire Fabric is prefabricated and can be placed continuously over the supporting beams (Sec. A.C.I. Building Code, Sec. 505 [G][4]), it takes less hands —and less time to place, and there is less material to transport and unload at the job.

Wherever you find modern concrete construction you will find American Welded Wire Fabric. It is the world's most widely used concrete reinforcement.

Write to our nearest sales office today for complete information on specific designs and standard styles and sizes of American Welded Wire Fabric which are available from conveniently located jobbers' and dealers' stocks. American Welded Wire Fabric Handbook will be sent to you free— just write and ask for it on your business stationery. Our technical staff will be glad to supply helpful data on your special requirements for any type of concrete construction.



AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL COMPANY, GENERAL OFFICES: CLEVELAND, OHIO

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS

TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

EVERY TYPE OF REINFORCED CONCRETE CONSTRUCTION NEEDS

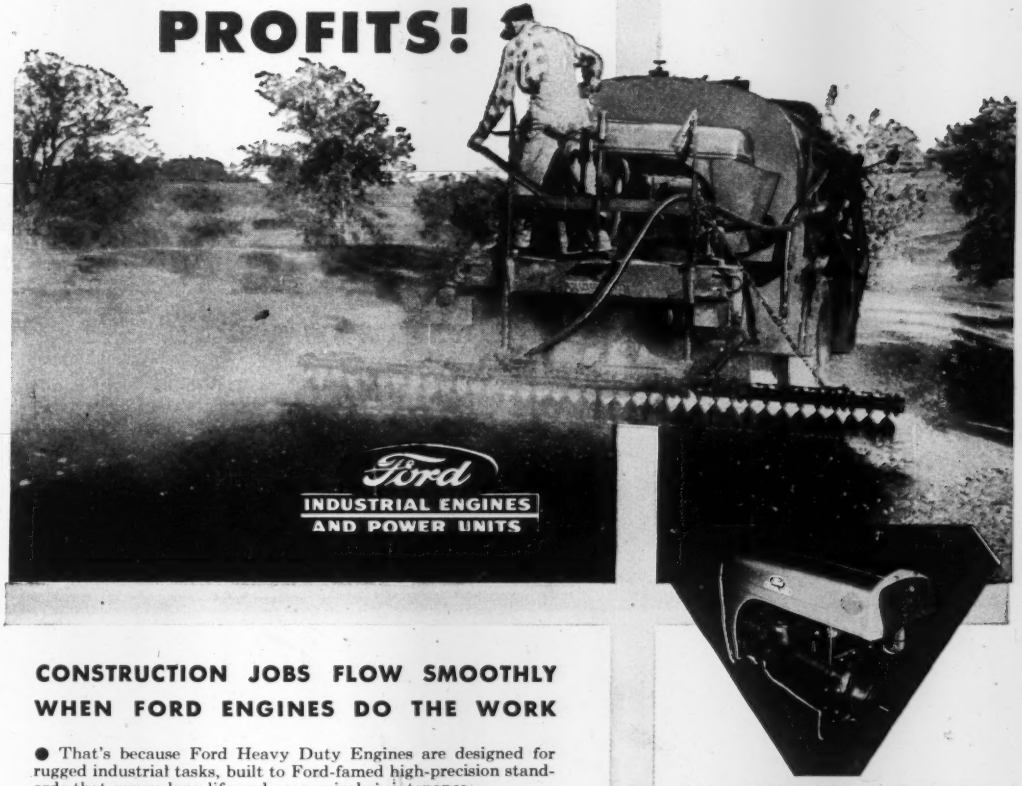
U·S·S AMERICAN WELDED WIRE FABRIC

UNITED STATES STEEL

FORD POWER

is the right road to

PROFITS!



In the scene above, a Bituminous Pressure Distributor with Miracle Spray Bar, manufactured by Standard Steel Works, North Kansas City, Mo., is shown at work. The Ford "120" Power Unit selected by the manufacturer for this operation is shown at rear of equipment.

CONSTRUCTION JOBS FLOW SMOOTHLY WHEN FORD ENGINES DO THE WORK

● That's because Ford Heavy Duty Engines are designed for rugged industrial tasks, built to Ford-famed high-precision standards that assure long life and economical maintenance.

There are three good reasons why you should specify Ford Engines for virtually any type of operation. *First*—There's a choice of 4-cylinder, 6-cylinder and V-8 types ranging from 120 to 317 cu. in. displacement, which assures you of the RIGHT POWER. *Second*—You have available a complete line of special equipment and accessories to meet specific operating needs and assure you of the RIGHT FEATURES. *Third*—Ford Dealers are everywhere to supply replacement parts or expert mechanics, which means the RIGHT SERVICE.

Yes, Ford Power is RIGHT! No matter what type of equipment you build or use . . . specify FORD! The coupon will bring you detailed information on any of the six engines Ford offers.

Our experienced engineers are ready to cooperate in any development problems involving the best use of Ford Industrial Power.

Specify Ford because . . .

YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED!

MAIL THIS FOR FULL INFORMATION!

INDUSTRIAL ENGINE DEPARTMENT
FORD MOTOR COMPANY
15050 Woodward Ave., Highland Park 3, Mich.

We are interested in Industrial Power for:

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(state your application)

Send us 1952 literature on Ford Industrial Engines checked below:

☐ "120" 4-cyl. ☐ "134" 6-cyl. ☐ "215" 6-cyl. ☐ "279" V-8 ☐ "239" V-8 ☐ "317" V-8

☐ "MULTA-TORQUE" Converter

Firm Name_____
(please print)

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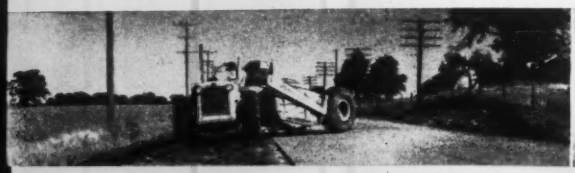
City_____ Zone____ State_____ A

P. W. RYAN SONS SAYS:

"There's a place for the 'D' on every big production job"

Superintendent Tom Ryan, speaking for his firm, one of Wisconsin's largest contractors, continues, "Our 7-yd. Tournapull is a good finishing tool . . . fine for trimming cuts . . . cutting 3-to-1 and 4-to-1 backslopes . . . just the right width for ditching. It works just about anywhere. It doesn't need a push to get a good load . . . it's fast on long hauls and in traveling from job-to-job."

The Ryan company, veterans of *40 years in the dirt-moving business,* move most of their scraper dirt with a fleet of 7 Super C Tournapulls and 6 tractor-drawn W Carryalls. Their 122 h.p. D Tournapull, usually used as a self-loading tool, does a large share of the fine-detailed finishing work on the company's big jobs . . . also handles small municipal contracts between major assignments.



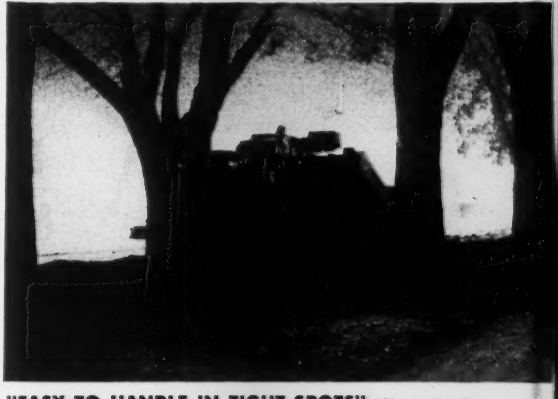
"DOESN'T NEED A PUSH" Placing earthfill on U. S. 14 near Walworth, "D" had to haul through open traffic estimated by State Engineer at 5,000 cars daily. Self-loading wet loam and gravel, it made 12 trips per 50-min. hour over 800′ cycles. On backsloping and finish-grading, Superintendent Tom Ryan estimates the "D" averages 100 self-loaded trips per 10-hour day.

"VERY FAST FROM JOB-TO-JOB" D Tournapull's light weight (22,450 lbs. empty), narrow width, and low-pressure tires allow roading the rig anywhere. It crosses railroad tracks, bridges, drives through heavy city and country traffic safely at speeds up to 28 m.p.h. . . . has averaged around 20 m.p.h. on 5 job-to-job moves to date.

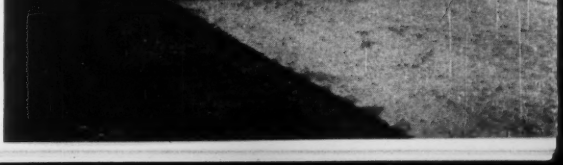
Works on 5 jobs in 4 months

First task for the electric-control "D" last season, for example, was as a clean-up rig on a 150,000-yd. county road near Verona. From here, it was driven 37 miles to stockpile topsoil and help grade 100,000 yds. on the Monroe-Monticello Hwy. That work completed, the "D" drove 66 miles (in 3½ hours) and, teamed with a second "D" on rental from Rockford Construction Co., moved 11,000 yds. to widen 10 miles of Hwy. 14 near Walworth. Next, Ryan's Tournapull, working alone, regraded 4 Janesville city streets, self-loading 4,000 yds. in 2 weeks. The versatile rig is now in Black River Falls, 190 miles north of Janesville, on its 5th job — finishing for a 400,000-yd. highway relocation. In all, Ryan's handy Tournapull worked 700 hours during this typical 4-month period, drove 330 miles job-to-job . . . overall, was 95% mechanically efficient.

William H. Ryan, partner in the Janesville company, says, "The 'D' by no means replaces larger units, but in a great many places it does much better than the big units. We're constantly finding new uses for it. It's just like a pair of pliers . . . does a lot of small but very necessary operations efficiently. It has a place on every job."



"EASY TO HANDLE IN TIGHT SPOTS" "No rig that I've ryin has been so easy to handle," says Bob Ritchey, Tournapull operator. "You can't beat 'em on long hauls. They're nice on the highway, easy to get in and out of tight places, easy to work on a 3-to-1 backslope, have plenty of power." Rig is shown, above, grading parkway in Janesville; below, turning on highway after grading shoulder.



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Makes the Big Difference
In TARPAULINS

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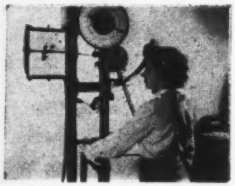
...gives You Greater Fabric Uniformity

Determining yarn tensile strength with 300-lb. vertical test. One of a series of comprehensive laboratory controls throughout production to assure uniformity in all Mt. Vernon-Woodberry products.



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Branch Offices: Chicago • Atlanta
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READER COMMENT

What measures size?

Sir: In the June 5, 1952, issue of ENR p 50, under "Municipal," there appears an article, "Open Pittsburgh's airport, nation's second in size."

I believe you must have overlooked Friendship International Airport as the nation's second in size. Friendship International Airport contains 3,200 acres as against 1,600 acres in Pittsburgh's and has one runway 9,450 feet long, nearly two miles, 200 feet wide, another 6,400 feet long and 150 feet wide, and a third runway 6,000 feet long and 150 feet wide.

Friendship has water and sewage disposal and a well planned and designed terminal building with taxi strips and loading platforms.

According to the Civil Aeronautic Authority, this combination of features means "Friendship can take with ease anything flying today," or any plane now contemplated.

It would be much appreciated if recognition of the importance of Friendship International Airport could be brought out in ENGINEERING NEWS-RECORD, upon your verification of the facts.

I. ALVIN PASAREW
Director
Maryland State Planning Commission
Baltimore, Md.

(EDITOR'S NOTE: For recognition of Friendship International Airport, see the five-page article in ENR Feb. 1, 1951, p. 32. Pittsburgh built a bigger terminal, spent more dollars.)

Minimum speeds

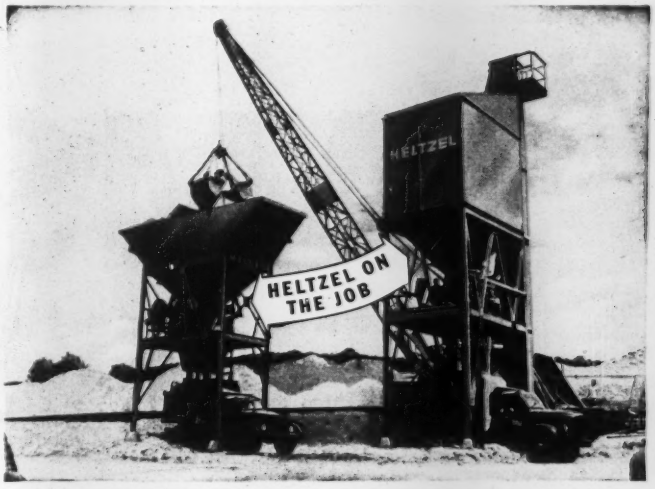
Sir: I am very pleased to read your editorial of June 12, p 144, with regard to minimum speed limits. I agree with your conclusion that the matter should be left to the discretion of the enforcement officer rather than to means of signing because of the difficulty of enforcement, but I do feel that emphasis should be placed upon the hazardous conditions caused by the slow moving driver as well as by the faster moving driver.

In my experience I have, many times, concluded that possibly, contrary to your statement, a low speed can be as potentially dangerous if not more than high speeds under varying conditions.

Through some manner the slow moving driver must be educated to the fact that he may be driving in a careless and reckless manner, because unfortunately in most instances he has been continually informed that a slow

Heltzel BUILDS IT BETTER

HELTZEL HELPS
CONSTRUCTION DOLLARS
GO FURTHER



HELTZEL ON THE JOB ON THE PENNSYLVANIA TURNPIKE
Where new records were made and broken

PROBLEM: To select batching equipment of speed, accuracy and ultra portability to put paving operations on a much faster schedule than ever attained.

ANSWER: After charging as high as 140 batches per hour on an airport project this batching operation was moved to the Pennsylvania Turnpike where this high production was maintained.

Heltzel Type One for aggregates and Type E-2 for bulk cement were set in line for continuous truck drive-through. Using dual batchers, 2-batch trucks were loaded in one stop and 3 and 4-batch trucks in only two stops.

Type One—Capacities: 52, 72, 85 and 100 tons; used with 1¼-cu. yd. Universal Batcher or 2½-cu. yd. Dual Batcher.
Type E-1*—Capacities: 100 and 200 bbls.
Type E-2*—Capacities: 300 and 400 bbls.
*Used with 14-cu. ft. Dustless and 28-cu. ft. Dual Dustless Batchers.
Capacities may be increased with hopper extensions and recirculating tanks.

Heltzel BUILDS IT BETTER
The Heltzel Steel Form & Iron Company
Construction Equipment Since 1910
WARREN, OHIO
Flex-Plane

For the War Against Wear in the Fight for Economy

AMSCO

Manganese and Hardfacing Rods

AMSCOATING
THE RIGHT WAY TO SAY HARDFACING

Immediate Delivery

Impact and abrasion are always at work but their effects can be postponed through the use of AMSCO Welding Products. Reclamation and rebuilding of worn or damaged equipment parts by Amscoating means dollar-saving, long-lasting protection. The AMSCO Hardfacing System successfully fights wear caused by impact, abrasion, heat or corrosion. It assures longer equipment life and fewer repairs.

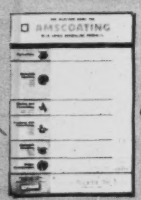
For prompt delivery of these welding products, contact your AMSCO distributor.

AMSCO AW-79 will meet every requirement for better control of wear where abrasion and impact are important factors—plus all the advantages of automatic welding. Especially suitable for rebuilding and hardfacing tractor rollers, steel wheels, sheeting rolls, dredge pins as well as dozens of other applications. 5/32" and 1/16" in 22½" ID., 100 lb. coils.

AMSCO No. 459 for severe abrasion, mild impact. Has excellent abrasion resistance. All diameters, bare and coated.

AMSCO No. 217 for abrasive service up to 1100° F. The deposit retains hardness at high temperatures. All diameters, bare and coated.

AMSCO No. 6 for combination of corrosion or abrasion, or for 1000° service and above. Used as facings for tool and die applications. No. 1 has greater abrasion resist-



This Wall Chart can save you money. Listing over 50 common hardfacing applications, it recommends the right AMSCO rod to use and the preferred method of application. Write for this free wall chart guide today.

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Brake Shoe
COMPANY

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis.

WELDING PRODUCTS

Manganese Steel Bars and Shapes

CONTROLS IMPACT and ABRASION

Through many years' experience in the production and application of manganese steel—"the toughest steel known"—AMSCO has developed welding products designed solely to conserve and protect parts exposed to impact and wear. American Brake Shoe Company's scientists and engineers are working continuously to build better defenses against wear in machines and equipment.

AMSCO Welding Rods are known for their excellent service in many applications—from rock crushers to materials handling pumps . . . in forging, rolling, stamping, and cutting . . . for gears, sprocket wheels and clutch cams . . . in grinding, mixing, and chipping operations . . . Whatever your problem of wear, there's a "proved-in-service" AMSCO Hardfacing Product that can solve it.

ance; No. 6 is the tougher, and can be machined. All diameters, bare and coated.

AMSCO No. 1 for combination of corrosion or abrasion, or for 1000° service and above. Used as facings for tool and die applications. No. 1 has greater abrasion resistance; No. 6 is the tougher, and can be machined. All diameters, bare and coated.

AMSCO FARMFACE or AMSCO CHROMEFACE for industrial and farm use. Deposit has excellent resistance to low stress-gliding abrasion. All diameters, bare and coated.

AMSCO AIR-HARDENING for abrasion and severe impact. Deposit can be forged to a sharp edge without losing hardness. All diameters, bare and coated.

AMSCO HF-40 for severe abrasion and moderate impact. Deposits of HF-40 are hard and abrasion resistant. All diameters, coated only.

AMSCO HF-60 for moderate impact and severe abrasion. This rod is particularly suitable for application in both flat and vertical positions. All diameters, coated only.

AMSCO CO-MANG for build-up on manganese steel castings exposed to severe impact. Deposit has excellent impact resistance. All diameters, coated only.

AMSCO TOOLFACE for metal to metal wear up to 1000° F. Toolface deposits have excellent abrasion resistance. All diameters, bare and coated.

AMSCO DIEWELD for tools and dies. Deposit may be softened for machining and rehardened. Retains a keen cutting edge.

AMSCO V-MANG for build-up on manganese castings exposed to impact.

TUNGSTEN CARBIDE.

A complete line of manganese steel dipper tooth repointer bars and other shapes are available.

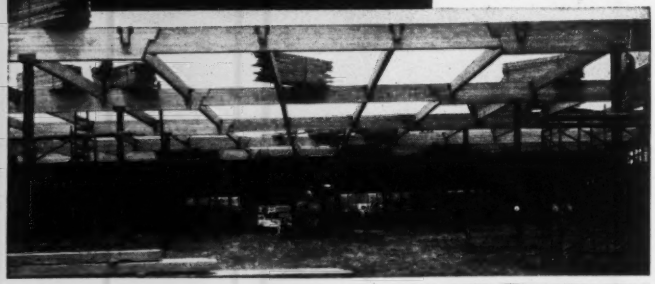
AMERICAN MANGANESE STEEL DIVISION

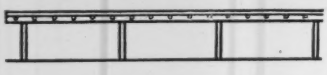
379 EAST 14th STREET • CHICAGO HEIGHTS, ILL.

In Canada: Joliette Steel Division, Joliette, Que. Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

Practical Approach to Efficient Buildings

Simple, time-saving construction of Wyatt Warehouse, North Kansas City, Missouri, built with glued laminated beams. Sketch below shows other beam applications.





Here's a good case study of how to build a permanent structure...with large open floor areas...quickly... at minimum cost.

Glued laminated beams and purlins form the primary roof structure. Heavy tongue-and-groove decking was laid over the purlins and mopped-on roof was then applied. Beams and purlins were delivered to the jobsite pre-cut and pre-fitted, speeding construction and lowering costs.

Dimensionally Stable... No Maintenance

Formed entirely of kiln dried material, glued laminated members "stay put" without shrinking, cracking, twisting or warping. This removes the principal cause of maintenance, and results in lasting economy, and long-time usefulness.

Naturally Resistive to Destruction by Fire

These beams qualify for mill type construction which for generations has made an excellent fire record. Due to natural insulating properties of wood, heavy timber members when attacked by fire lose strength very slowly, and frequently remain fully usable even after severe exposure. Consequently, fire insurance rates are favorable to this type of construction.

"Glu-Lam" beams are particularly efficient because their dense smooth surfaces afford no entry to interior.

A new booklet, "Industrial Buildings", gives detailed information on glued laminated members. Get a copy from your nearest Timber Structures office, or mail us the filled-in coupon.

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moving vehicle cannot be dangerous. Many accidents could be prevented, particularly those on heavily travelled highways where passing maneuvers become more and more difficult because of increased volumes.

I would like to conclude, however, that if maximum or minimum speed limits are to be adopted, they should be determined strictly on engineering warrants and accordingly have less tolerance than are now found on many of our roads where these limits are adopted haphazardly.

JEROME D. FRANKLIN
Traffic Engineer,
City of Grand Rapids, Mich.

Old firm

Sir: In reply to Mr. Carl R. Langer's request in the Engineering News-Record of April 24, 1952, regarding the "Oldest U.S. Building Firm", may I call your attention to the following:

The Weitz Company, Inc., Des Moines, Iowa, was established in 1855 by Mr. Charles W. Weitz. The firm is still going strong under the management of Mr. Rudolph W. Weitz, grandson of the founder, and I understand that a fourth generation Weitz is getting ready to take over when that becomes necessary.

P. S. MUNK PEDERSEN
Engineer
U. S. Quartermaster Corps
Washington, D. C.

Older firm

Sir: In your column "Reader Comment," you published a letter from Carl R. Langer on relative ages of construction companies.

We enclose a copy of an announcement we sent out to our friends in 1948, commemorating our hundredth anniversary.

Our company is primarily engaged in heavy construction and foundations.

ROBERT CRIMMINS
Secretary
Thomas Crimmins Contracting Co.,
New York, N. Y.

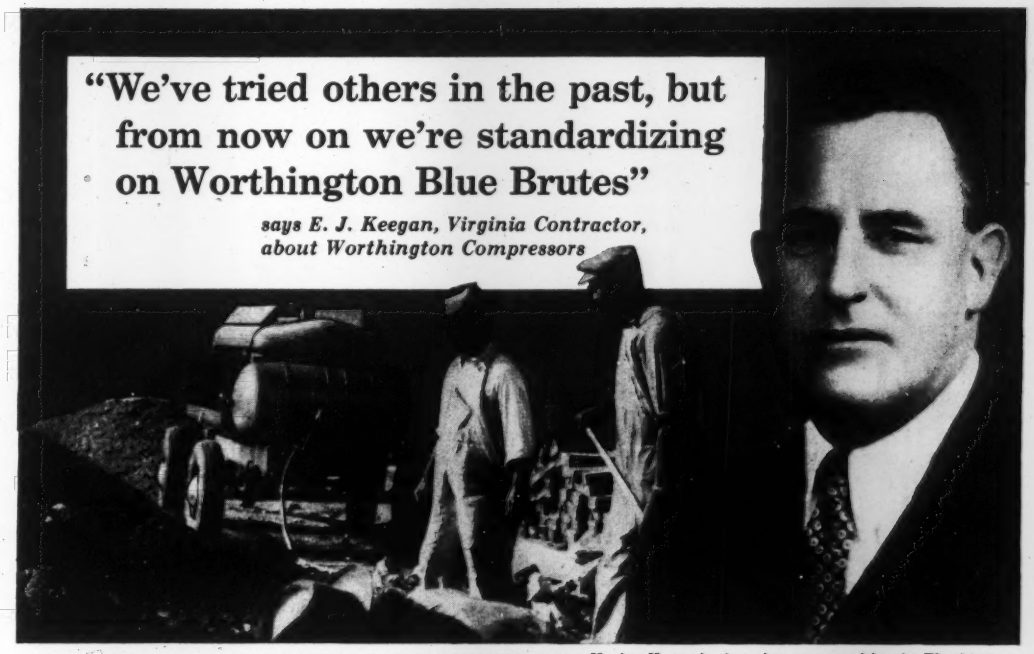
Biggest Crane?

Sir: In your Engineering News-Record issue of May 22 on Page 60, I note the 120-ton stiff-leg derrick at the Port of Charleston is "said to be the largest commercial crane south of New York". The Port of Houston, Texas, is equipped with a 300-ton capacity floating crane.

W. F. HEAVEY
General Manager
Port of Houston
Houston, Tex.

"We've tried others in the past, but from now on we're standardizing on Worthington Blue Brutes"

says E. J. Keegan, Virginia Contractor, about Worthington Compressors

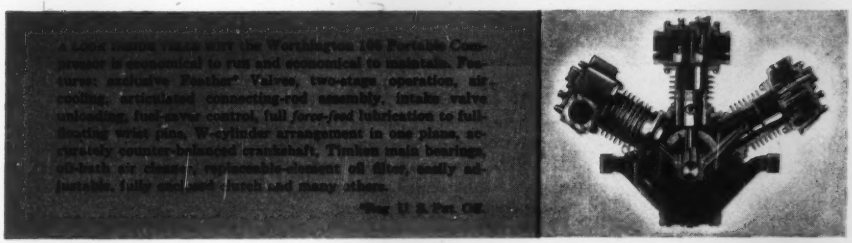


ON THIS MILLION-DOLLAR JOB IN RICHMOND, VA., Hughes-Keegan's air tools are powered by the Worthington Blue Brute 105 Portable Compressor in the background. Job of removing streetcar tracks and ties and widening Richmond's Broad Street was recently completed.

Hughes-Keegan, Inc., Richmond, Va., contractors, have had plenty of opportunity to put compressors through the toughest grinds.

But, E. J. Keegan, president of the well-known firm, tells us they've standardized on Worthington compressors because they've always come through. Hughes-Keegan now has six Blue Brute 105 compressors and a total of 15 Blue Brute air tools.

Blue Brutes may step up efficiency on *your* construction jobs. Write for more facts and bulletins to Worthington Corporation, Construction Equipment Division, Plainfield, New Jersey.



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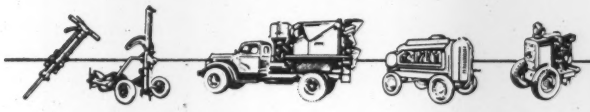


If It's A Construction Job, It's A *Blue Brute* Job

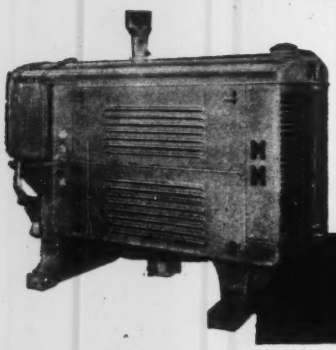
WORTHINGTON

Construction Equipment

LOADS OF OVER 25 TONS LIFTED HIGH AND DRY

THIS MM Powered* AMERICAN CRANE Helped Omaha Roll with the Punch!

*** MM 403-4A**
POWER UNITS DELIVER "AROUND-THE-CLOCK" DEPENDABILITY ON AMERICAN MODEL 375 TRUCK CRANES



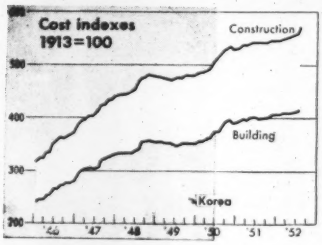
Ol' Man River's Punch was met with preparedness when flood threatened devastation to Omaha's industrial area. The city's disaster committee made arrangements for moving of equipment to minimize loss. MM powered American Cranes were called into service and "not a single American Crane, working around the clock, had to stop or slow down for any reason."

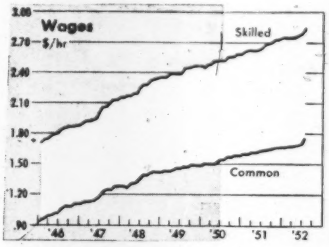
Manufacturers of heavy equipment know that the success of their unit often depends on the power unit. That's why more and more of them select MM economical, low-speed, high-torque power units of proved dependability. Can you afford to settle for less?

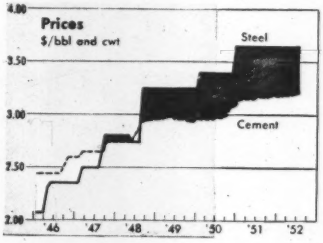
See Your MM Dealer Distributor or Write

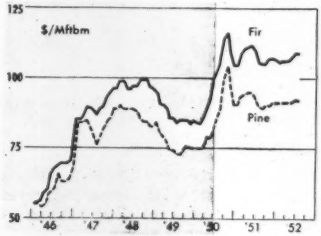
MINNEAPOLIS-MOLINE
MINNEAPOLIS 1, MINNESOTA

JULY CONSTRUCTION SCOREBOARD









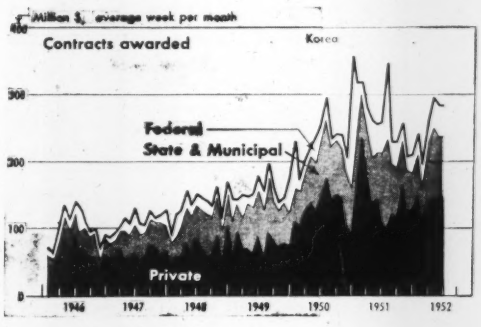
ENR INDEXES (1913 = 100), 20-cities' average	1952 July	% Change from last Month	% Change from last Year
Construction Cost	570.65	+1.6	+5.2
Building Cost	414.46	+0.5	+3.5
WAGE RATES, 20-cities' average			
Common	$1.755	+2.9	+7.7
Skilled (aver. 3 trades)	2.849	+1.5	+5.9
Bricklayers	3.152	+0.4	+6.6
Structural Ironworkers	2.790	+1.8	+5.5
Carpenters	2.608	+2.6	+5.8
MATERIAL PRICES, 20-cities' average			
Cement, bulk, per bbl	$3.211	+0.4	+1.5
Structural Steel, (3-mill aver.), per cwt	3.650	0.0	0.0
Sand, per ton	2.106	0.0	+0.8
Lumber, 2x4 Fir, per M. ft. bm	109.555	−0.7	+3.9
Lumber, 2x4 Pine, per M. ft. bm	92.333	−0.8	+1.8
Common brick, per M	31.601	+1.5	+1.2
Ready-mixed concrete, per c. y	11.056	+1.3	+1.2
Structural Clay Tile, 3x12x12 per M	151.288	0.0	+2.5

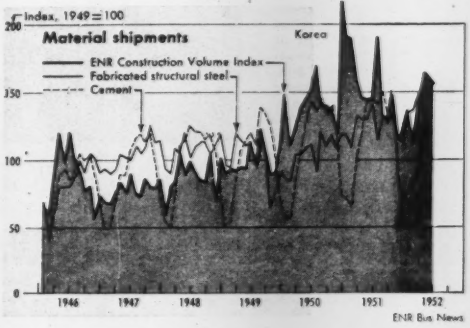
CONTRACTS AWARDED (Millions)	1952 June	1952 6 Mos.	% Chg. from '51 June	% Chg. from '51 6-Mos.
Total U. S. (ENR reported)	$1,140.7	$6,782.7	+11.0	− 6.9
Private	568.8	3,578.7	+28.2	−14.6
Public	571.9	3,204.0	− 1.9	+ 3.6
Federal	196.8	1,065.2	+ 8.8	− 7.7
ENR Volume Index, '13=100	543	505	+ 8.4	−10.5
NEW CAPITAL (Millions)				
Total	$1,044.1	$4,129.8	+ 3.7	−30.0
State & Municipal Bond Sales*	587.5	1,801.2	+147.6	+40.8
Corporate Security Sales	442.9	2,194.4	+10.4	+39.1
Federal (non-federal work)	13.7	134.2	.....	+83.5
Federal (federal work)	.....	.....	−100.0	−100.0

* Excluding public housing

MATERIAL SHIPMENTS & LABOR SUPPLY (Millions)	1952 April(A) May(M)	4-Mos.(4) 5-Mos.(5)	% Chg. from '51 Mo.	% Chg. from '51 Yr.-Cum.
Cement, bbls, Bu. of Mines	21.764(A)	64.815(4)	+4.0	+4.3
Fabr. Struc. Steel, tons, AISC	220(M)	1.211(5)	−5.9	+8.8
Lumber, mil. ft. bm., NLMA	3.251(A)	12.069(4)	−5.9	−7.0
Lumber Prod., mil. ft. bm., NLMA	3.197(A)	11.896(4)	−7.8	−5.0
Contract Constr. Employ., BLS	2.498(M)	2.367†(5)	−3.8	−0.6

† Average





THOROSEAL SCORES ANOTHER HOME RUN at the Braves Field

General contractor and technical supervisor of Standard Dry Wall Products, Inc., plan correction of an extreme condition existing in bleacher seats at Braves Field, Boston, Massachusetts.

Above photograph shows THOROSEAL FOUNDATION COATING being grouted into upper, or wearing, surface of bleacher seats.

Right photograph shows soffits of concrete seats where concrete has blistered away from reinforcing rods. Rods were sandblasted and sealed with THORITE Patching Mortar and entire undersurface sealed with THOROSEAL.

General contractor, Henry Gironi, Allston, Massachusetts, an expert, with long experience in masonry maintenance, rehabilitation and surface protection, performs correction task on Braves Field, with satisfaction to all concerned. Waterproofing Products, Inc., Allston, Massachusetts, furnished the materials.

THORITE Patching Mortar was used for sealing rods and patching cracks and blisters in concrete. THOROSEAL FOUNDATION COATING was used for grouting wearing surfaces.

"HOW TO DO IT." Get our new 20-PAGE BROCHURE, with designer's guide. Pictorially described, in detail

Standard Dry Wall Products — 40th YEAR

NEW EAGLE, PENNSYLVANIA

THE CONSTRUCTION WEEK

WHO'S AN ENGINEER?—The 82nd Congress didn't succeed in adjourning (see p. 21). But it did succeed in defining a "professional engineer."

Said Congress (in the new Defense Production Act): All compensation to professional engineers is decontrolled where the engineer is employed in a professional capacity. Added the Salary Stabilization Board (in Interpretation 12):

A professional engineer must have a college degree or license to practice. Technicians—no matter how highly skilled—advisers on sales promotion, business methods and operations, persons simply designated "engineers" (stationary, maintenance, sales, management) are not "engineers."

WHO CAN BARGAIN?—And the decision of the Construction Industry Stabilization Commission granting, in effect, two separate rates for bricklayers in New York (see p. 26) pointed up a reason why general contractors have quietly opposed the National Association of Home Builders.

What the contractors thought they had reason to fear was this: If CISC has recognized more than one bargaining group in the same trade in an area, what's to prevent NAHB from setting itself up as a bargaining group, getting approval of area rates and working conditions that may be far out of line with general contractors' traditional agreements?

AND CONTROLS STAY—There are good economic reasons underlying it all, of course—but it's the steel strike that will get most of the blame for continuing controls on materials.

Strike-caused losses of steel (estimated at 11.5 million tons in five weeks) have thrown out the window well-founded government plans to abandon allocation controls within about six months. Said Henry H. Fowler, DPA Administrator: Controls will remain until the middle of next year.

NO LABOR CHANGE—Although the AFL's Building Trades Department didn't like some of the provisions, it obviously wasn't unhappy over proposed amendments to Taft-Hartley (S. 1973) that would have exempted the construction industry from election requirements and made the union shop legal in construction (ENR May 8, p. 32).

But congressmen from the states with right-to-work laws didn't relish suspending those laws; contractors weren't happy about having T-H's 30-day probationary period (for joining the union) cut to seven.

Result: The House Labor Committee let the amendment die.

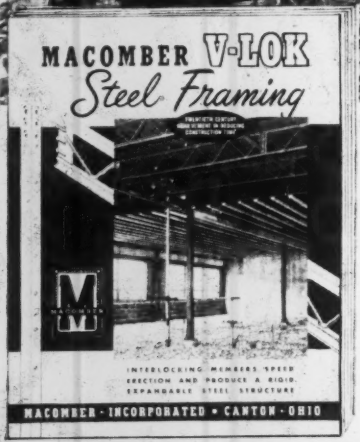
IN THIS ISSUE—How Congress treated the construction industry (p. 21) . . . St. Lawrence project advances (p. 24) . . . A pair of power giants for the Ozarks (p. 25) . . . New York contractor groups split over wage rates (p. 26) . . . Anti-trust indictments returned against contractors and unions in Chicago (p. 27) . . . Atom job tied up by inter-union squabble (p. 28) . . . Where we stand on seismic and blast design (p. 30) . . . Construction colleges urged (p. 31) . . . Nation's largest parking building completed (p. 34) . . . Big steel builds a waterworks (p. 40) . . . Paving speed bowl: done with strings (p. 42) . . . San Francisco redevelopment takes another step (p. 46) . . . U. S. firm builds $15-million alkali plant in Colombia (p. 61) . . . Timber researchers report new construction methods (p. 69) . . . Engineer board celebrates 50th anniversary (p. 72) . . . A building with eyebrows (p. 99) . . . June contracts 11% ahead of 1951 (p. 100) . . . Industrial building 150% over 1950 (p. 101) . . . New products (p. 122) . . . Editorials (p. 128).

WHAT IS V-LOK?

WHAT STRUCTURAL ADVANTAGES HAS V-LOK FRAMING?

INTERLOCKING MEMBERS SPEED ERECTION AND PRODUCE A RIGID EXPANDABLE STEEL STRUCTURE

TWENTIETH CENTURY ACHIEVEMENT IN REDUCING CONSTRUCTION TIME



The Macomber V-LOK Building is not a standardized steel building. It is a custom designed structural system using standardized parts. The building is then completed with conventional materials to carry out any occupancy need or architectural effect.

For many types of buildings, V-LOK is a practical method of steel framing designed to reduce building costs in a rapidly rising market.

V-LOK gives the builder an instantaneous connection requiring nothing but a hammer to seat the connectors in the locked position.

Since V-LOK Framing lends itself to a wide variety of shapes, sizes and topographical conditions, you can design for just about any needs of the owner.

There is no more economical approach to carefully engineered steel construction as a result of these basic economies designed into every square foot of V-LOK Steel Buildings.

This new catalog gives designing information, dimensions, loadings and IDEAS in application of V-LOK to today's needs. Your copy is ready.

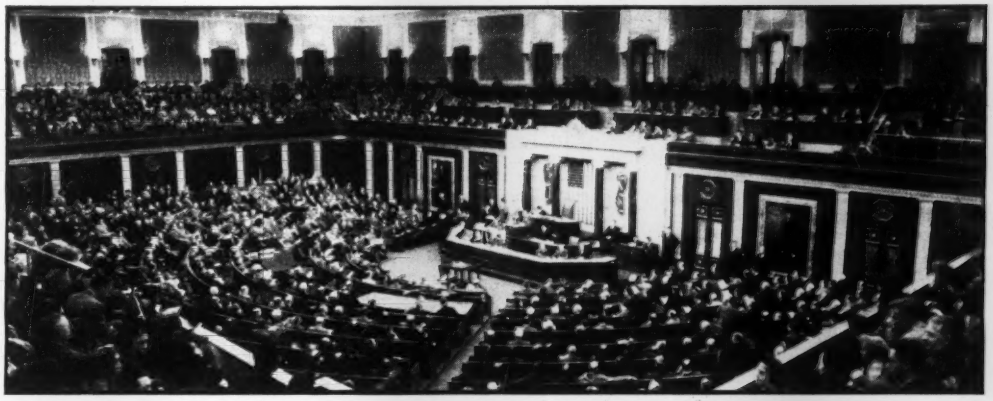
V-LOK — THE TRANSPORTABLE PACKAGE

STANDARDIZED STEEL BUILDING PRODUCTS

MACOMBER • INCORPORATED

CANTON, OHIO

V BAR JOISTS • LONGSPANS • BOWSTRING TRUSSES • STEEL DECK



Congress votes billions for construction

The Congress that finally gave up lawmaking this week in favor of presidential year politicking put a lot of time, effort, and money into the construction industry.

In general, Congress talked a lot of economy, but still managed to vote billions of construction funds for housing, military construction, civil functions, atomic energy and other programs. (See table on page 22.)

- It added new mortgage purchase authority to Fannie Mae to boost homebuilding.
- It lopped off a lot of controls—but at the last minute did not remove the restrictions of Regulation "X."
- It did a lot of investigating of parts of the construction industry—but not much of a tangible nature resulted from the investigations.
- It voted extra money for flood victims—but didn't come up with any new solutions for the Midwest river disasters that caused hundreds of millions of dollars of damage.

• Snag hit—Significantly, it was two construction proposals which kept Congress still in session as the week began.

Congress by the weekend had cleaned up most of the major money bills and had completed action on a number of other measures that directly affect construction.

But Senate snags delayed plans to adjourn at the close of Saturday's session. The Senate refused to accept conference compromises that would: (1) End "blank check" freedom for atomic energy construction and (2) Drop Hartwell Dam from the list of Army civil projects to be started this year.

The House finally proposed the final compromise—vote AEC $2.8 billion, which is what AEC said it needed to complete all projects for which money is voted in the bill, and keep the House amendment which would prevent AEC from starting any projects for which it does not have sufficient funds for completion. Funds were not voted for Hartwell Dam, but the committee agreed to take up Hartwell and a similar dam at Ice Harbor, Wash., the next time it is in session.

Before the Republicans left Washington Saturday for the party convention, congressional leaders had agreed to limit Monday's action to the two points in dispute.

That decision spoiled chances of passing the Wunderlich Bill this month (ENR June 12, p. 17). The Senate approved the measure and sent it to the House last week. If given an opportunity to vote, the House was expected to pass this bill, restoring to contractors the right to court review of government contract disputes.

No such favorable prospect was in store for the anti-bid shopping bill supported by the subcontractors (ENR June 12, p. 21). Arguments by the Associated General Contractors against the measure strongly influenced the Senate Judiciary Committee. The committee two weeks ago reported the bill with corrective amendments but without recommendation. Last week, when the measure came up in the Senate, it was promptly tabled, killing the only chance for a vote this year.

• More for highways—Highways fared well in the 1952 session. Congress authorized $575 million per year of federal aid for the two fiscal years starting July 1, 1953, and July 1, 1954. This sum topped the President's budget request by $175 million and came within $25 million of the biggest proposal introduced in Congress. It exceeds the present federal aid authorization by $75 million.

Congress also amended a 1940 law on payment for bridges that the federal government—through the Board of Engineers for Rivers and Harbors—ordered relocated or rebuilt. The 1940 law authorized federal payment for new railroad bridges but required the states to pay for new highway bridges. If President Truman signs a bill that Congress passed in the closing days of the session, the federal government will henceforth assume the cost of new highway bridges that it orders built.

• More to come—Congress voted the bulk of the construction money that will be spent this year. But it did not approve all the funds that will be needed before June 30, 1953.

An example is the appropriation for federal highway aid to the states. The Bureau of Public Roads plainly told the appropriations committees that the $325 million they voted would not cover the money due the states this year. With federal-aid commitments piling up at a faster rate than last year, BPR will have to come back for

a supplemental appropriation soon after Jan. 20.

On its money bills, Congress was torn between needs and desires. It attempted to vote necessary funds to carry essential programs forward, while at the same time holding money totals to economy levels that would look good to the voters back home. Funds approved for several programs are barely sufficient to keep them rolling until spring. By that time, the legislators figured, government agencies could get supplemental cash out of the next Congress.

In addition to highways, the 83rd Congress may have to consider construction supplementals for military public works, atomic energy, defense housing, community facilities, and other programs related to the defense buildup. These supplementals will increase some fiscal 1953 federal construction appropriations to larger totals than those so far approved.

• **Larger funds voted**—Defense housing and the necessary community facilities to serve it likewise made strides during the last session. Building of housing for families of defense workers and military personnel had been delayed by hesitancy of lending institutions in putting money into government-insured mortgages on units that might be occupied only a few years. Congress corrected that condition by voting the Federal National Mortgage Association (Fannie Mae) $900 million that it can use to make advance commitments for purchase of such mortgages from the original lenders. With the protection of an assured secondary market, lenders will be much more willing to invest in defense housing mortgages.

What Congress voted for construction

Who Gets It	Appropriations Fiscal 1953	Appropriations Fiscal 1952
Military public works	$2,146,764,840	$4,183,920,700
Air Force	1,200,000,000	2,258,500,000
Army	585,510,000	1,073,763,700
Navy	361,254,840	851,657,000
Army civil functions	584,061,600	581,217,713
Atomic Energy Commission	2,800,000	1,604,997,750
Bureau of Reclamation	177,797,991	208,052,725
Roads	401,770,000	461,995,000
Federal grants to highways	325,000,000	394,500,000
National parks & parkways	14,770,000	11,370,000
Forest roads (Bur. of Pub. Rds.)	18,000,000	21,000,000
Forest roads (Forest Service)	11,000,000	13,000,000
Access roads	15,000,000	1,500,000
American highway	1,000,000	3,000,000
Alaska roads	17,000,000	20,000,000
Alaska Tongass Highway	NONE	3,500,000
Elimination of grade crossings	NONE	3,000,000
Public lands highways	NONE	1,125,000
Defense housing	50,000,000	37,500,000
Community facilities	8,000,000	28,625,000
Housing & Home Finance Agency	NONE	20,625,000
Federal Security Agency	8,000,000	8,000,000
Alaska housing	4,000,000	5,000,000
Tennessee Valley Authority	336,000,000	231,905,791
Federal grants to airports	19,281,154	28,700,000
Federal grants to hospitals	134,700,000	182,500,000
Federal grants to schools	135,000,000	75,000,000
Veterans Administration	42,475,000	27,505,080
Bureau of Indian Affairs	17,500,000	10,575,000
Power distribution agencies	81,632,900	71,193,5000
Bonneville Power Administration	66,523,400	67,500,000
Southwestern Power Administration	4,150,000	3,375,000
Southeastern Power Administration	959,500	318,500
Alaska Railroad	3,906,000	2,000,000
Alaska Public Works	13,208,200	7,000,000
National Advisory Committee for Aeronautics	17,700,000	18,350,000
Bureau of Mines	3,600,000	1,587,412
Public Health Service, constr. of research facilities	NONE	17,685,540
International Boundary and Water Commission	11,150,000	12,000,000
Bureau of Standards, constr. of laboratories	NONE	3,800,000
General Services Administration	14,000,000	4,400,000

Congress also was more liberal than before in voting funds to help communities build facilities (sewers, water lines and streets) to serve defense housing. Congress approved the first money for this program in the fall of 1951, and the work has been retarded by lack of funds. Appropriations made last week will help to speed it up.

Larger funds were voted, too, for government construction of defense housing in isolated areas where private builders don't want to take on the job. The money appropriated last week would take care of about 5,000 dwelling units. With funds previously voted, the government now is in a position to build a total of some 9,000 units if necessary.

• **Concerning labor**—On labor matters, probably the most important legislation up was the Taft-Humphrey Bill (S. 1793) to exempt the construction industry from Taft-Hartley elections and to modify union shop restrictions. The bill passed the Senate (ENR May 29, p. 30), but was buried in the House Labor Committee.

Authority to handle labor disputes was taken from the Wage Stabilization Board. This means the Construction Industry Stabilization Commission, an arm of WSB, can't be used in disputes, either.

• **Water policy question**—Pollution control took a setback in the fiscal 1953 appropriations. Congress voted no money to continue federal grants to the states for industrial waste studies. Bills to encourage construction of industrial treatment plants by permitting rapid amortization made little progress.

At the end of the session, Congress appropriated $2 million for research on methods of converting sea water to fresh water. The Secretary of Interior is authorized to conduct development work, to let research contracts, and to cooperate with other public agencies and private citizens on this program.

Water policy legislation did not reach Congress before the end of the active session. At the dedication of Bull Shoals Dam last week President Truman said he would submit his proposals before he leaves office. The White House and the Budget Bureau are ironing out political and technical difficulties in a 85-page draft that has been put together without benefit of any advice from Congress.

Federal participation in the St. Lawrence Seaway and power project is not completely dead. After the Senate pigeonholed the St. Lawrence Bill, Canada and the United States went ahead with plans to have the power phase of the project approved

by the International Joint Commission and the Federal Power Commission. The Power Authority of New York State would take its case for a construction license back to the FPC for a rehearing. (See story on p. 24.)

With favorable action on the power dam by both IJC and FPC, Canada could go ahead with the all-Canadian seaway. But construction cannot begin until the spring of 1953, and Canada will wait that long for U. S. federal participation. Congressional proponents of the project decided to wait until next January before pressing again for action.

• **Ups and downs in housing**—Private homebuilders did not get everything they wanted from Congress. They were disappointed by the action on Regulation "X" in the Defense Production Act. Credit controls on housing will remain in effect at least until the middle of October. According to the amended law, the President is to suspend the controls only if housing starts for a three-month period show a decline below a 1.2 million annual rate. He may reinstate the controls if the rate later rises above this figure. Only in 1950 did the nation start more than 1.2 million units in one year.

On public housing, the results were more favorable to the private homebuilders. The House agreed to permit the starting of 35,000 low-rent local housing units in fiscal 1953, but only with the added proviso that this figure would be a ceiling for future years. The Housing Act of 1949 had authorized 135,000 units a year for six years, and the cut agreed to last week represents a real victory for the real estate interests and homebuilders.

• **Pay rule eliminated**—Professional engineers and architects were brought out from under wage and salary controls by the amendments to the Defense Production Act.

All compensation paid to professional engineers—there are an estimated 400,000—is decontrolled where the professional engineer is employed in a "professional capacity." The Salary Stabilization Board has issued Interpretation No. 12 defining who is a "professional engineer" and when he is employed in a "professional capacity." It lists the usual tests of a professional engineer, among them holding a college degree or license to practice.

SSB warns technicians, no matter how highly skilled, advisers on sales promotion, business and methods of operation, and the like, are not "engineers." Nor are persons simply designated as "engineers," such as stationary, maintenance, sales, management or administrative engineers.

SSB says a person is employed as a professional engineer only if he performs engineering work of a professional character as defined in the wage-hour law exemption for professional employees. It will not consider an engineer to be employed in a professional capacity if he is employed as an executive, as an administrator or in outside sales work.

An architect's compensation is not under control where he is employed in his professional capacity by an architect or firm of architects.

• **Other action**—The supplemental appropriations bill includes a rider that no public housing money can be used for housing in any city where the local electorate has rejected it. This may terminate a contract for public housing construction in Los Angeles, Cal. (ENR June 12, p. 22).

Heavy controversy broke out again last week over the Santa Margarita River in south California. Officials of the Justice Department and the Marine Corps went before the Senate Interior Committee to oppose a House-passed bill which would provide for operation of the De Luz Dam on the river and division of the impounded water between civilian and military uses (ENR June 12, p. 26). They said passage of the bill would mean an outright gift of 7,500 acre-ft of government-owned water a year to the Fallbrook Public Utility District near San Diego. Adjournment of Congress means no action until the next session.

• **Investigation roundup** — Congress conducted five large-scale construction investigations during the session. So far, the investigations are not complete and few definite findings are known. Three of the probes involved veterans' housing, one air bases abroad and one Army civil functions.

• **Housing**—The Teague Select Committee of the House investigated veterans' housing conditions in San Diego, which involved more than 40 people, with at least 25 criminal indictments expected. Oliver E. Meadows, staff director for the Teague Committee, said almost a city-wide conspiracy existed in financing of veterans' homes.

Involved in the conspiracy, according to Meadows, were the president and vice president of one of the biggest lending institutions in San Diego, a loan guarantee officer and his assistant, all of whom have been indicted. More indictments are expected to follow involving builders, VA employees, and veterans. Construction standards were ignored, according to Meadows, and appraisals "were a farce."

The San Diego investigation was the most flagrant violation of veterans' housing regulations to come to the attention of the committee, according to Meadows. However, the committee now is conducting an investigation of the VA housing in and around Washington, D. C. The committee is seeking to determine whether the failure of builders to meet specifications on veteran housing was due to insufficient teeth in VA inspection regulations or whether collusion existed between representatives of the VA and builders. So far there has been no proof of collusion.

The Rains Subcommittee of House Banking and Currency Committee conducted six months of hearings on defective housing sponsored by VA and FHA. Committee agreed at end that investigation did turn up some examples of shoddy construction, but these were in minority. The committee didn't think there was much it could do about the condition.

Committee conducted hearings in New York, Miami, Detroit, New Orleans, and Corpus Christi, and found almost identical patterns in each place. Most of the evidence presented was poorly prepared and lacked substantiation. Committee Chairman Rains felt that little or no legislation will result from them.

• **Air bases**—The Johnson Preparedness Subcommittee of Senate Armed Services Committee conducted an extensive investigation of Moroccan air bases which has not yet been formally concluded. There were charges of waste and mismanagement in construction of five bases in North Africa. Much of it was attributed to the rush to complete bases.

Testimony before the committee laid responsibility for waste at the door of Air Force officers in charge of bases and Atlas Construction Co. Atlas took the stand to refute testimony and as yet the military officers who ran the air base operation until last March have not been called to testify. Additional hearings are due to be held after the political conventions.

• **Army probe**—Army civil functions were thoroughly investigated during two months of hearings by a special House Public Works Subcommittee. The principal findings of these hearings pointed to: (1) Need for segregating inactive from active projects in the backlog of the Corps of Engineers, on some basis better than the present benefit-cost ratio, (2) Clearer demarcation and better coordination between the Army Engineers and the Agriculture Department on flood control activities, and (3) A sounder and more uniform policy on allocation of costs.

THE POWER PLAN for which the two governments now seek approval would require construction of the power plants and dams shown in this sketch, but the locks and ship canal would be on the Ontario side, instead of in New York.

St. Lawrence power sought

The governments of the United States and Canada, on June 30, applied to the International Joint Commission for approval of construction of the dams and power plants proposed to be built in the International section of the St. Lawrence River as part of the development of the river for power and navigation. If and when this authority is granted, the Canadian government has pledged itself to seek similar authority to build a new 27-ft ship canal on the Canadian side of the boundary and to have it completed concurrently with the power facilities.

The dams, control works, channel deepening and power plants covered by this application are the same as covered by the 1941 agreement, which is still before our Senate (ENR June 26, p. 25) and has not been approved. The principal structures are a low control dam at the upper end of the International Rapids, a large dam across the rapids at the head of Barnhart Island and a combined dam and power plant across the channel at Barnhart Island.

The International Boundary lies in this channel, thus making it possible to locate the United States power plant on the New York side and the Canadian plant on the Ontario side. Each plant is to have an installed generating capacity of 1,100,000 hp. Cost of the power facilities was estimated in 1950 at $450 million.

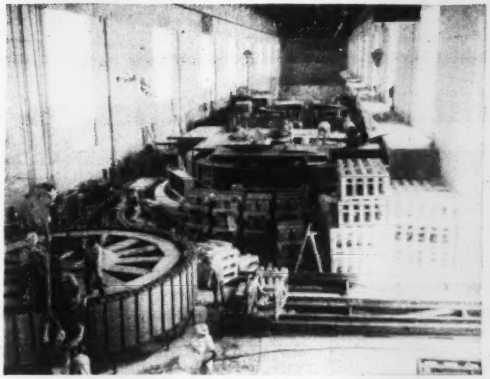
• **Navigation facilities**—During construction of the power facilities, the two governments agree to maintain the present 14-ft canal facilities. Canada agrees, independent of U. S. help, to build not only the locks and canals required for 27-ft navigation down the International Rapids section but also the 27-ft facilities required to replace the 14-ft facilities around the Soulanges Rapids and Lachine Rapids to tidewater at Montreal.

Last year, Lionel Chevrier, Canadian Minister of Transport, estimated the cost of the 27-ft navigation facilities at $250 million.

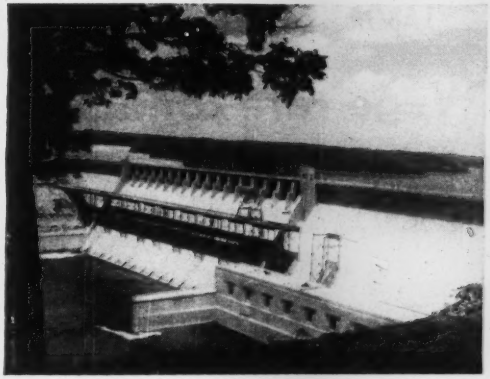
• **Who will do the work?**—The proposed power facilities are to be built by "entities to be designated by the Government of the United States and the Government of Canada," according to the application. There is no doubt about the Canadian entity. It will be the Hydro-Electric Power Commission of Ontario. The available agencies on this side of the border are the Power Authority of the State of New York, the Corps of Engineers, and possibly the Bureau of Reclamation. The latter two could not do the work without approval of Congress. The New York Power Authority could not do it without Federal Power Commission approval.

In December, 1950, the FPC denied an application from the New York Power Authority for a permit to do the work jointly with Ontario Hydro. An application for reversal of that decision is now before the U. S. Court of Appeals.

Until recently, President Truman favored having the federal government develop power, but when the Senate refused to approve the St. Lawrence project late in June, he told a news conference that New York and Ontario would have to develop the power.



GENERATING UNITS are being installed . . .



. . . as completion nears for Bull Shoals Dam.

A pair of power giants for the Ozarks

Tuesday of last week marked a significant milestone for the power-hungry, flood-endangered White River Valley—deep in the Ozark country of Arkansas.

It witnessed the dedication of two Corps of Engineers flood-control and hydropower projects: eight-year-old Norfork Dam and Bull Shoals Dam to be completed this fall. President Truman was the principal speaker.

As seen in accompanying boxes, the dams are similar in design and comparable in size. But Bull Shoals will be the greater workhorse, by far. Its project construction cost is $76 million, compared with $28.4 million for Norfork. Together these two gravity-type concrete giants will produce 230,000 kw of hydropower initially, and twice that amount ultimately.

Bull Shoals Dam

Principal features: dam (concrete, gravity type); total top length, 2,256 ft; base width, 230 ft; total height, 283 ft. Spillway (gated): length, 808 ft; radial chest gates, seventeen 40 x 28 ft. Control works: conduits, sixteen 4 x 9 ft, discharge (max.) 54,000 cfs; stilling basin, 808 x 203 ft. Reservoir capacity (acre-ft); dead storage, 964,000; hydropower, 2,084,000; flood-control, 2,360,000; total, 5,408,000; reservoir area (max) 71,240 acres. Power facilities: penstocks, eight 18-ft dia; power units, 4 initially, 8 ultimately; turbines (Francis, vertical-shaft) 67,500-hp each; generators, 40,000 kw each; annual power (4 units) 647 million kw. Major quantities: excavation, 850,000 cu yd; concrete, 2.1 million cu yd; reinforcing steel, 3,100 tons.

Norfork Dam started generating power in June, 1944. The two dams will also have a combined flood-storage capacity of 3,092,000 acre-ft.

Bull Shoals is located on the White River near Mountain Home and Norfork is on the North Fork River—a tributary of White River—near Norfork, Arkansas. Both sites are being developed as recreational areas.

• **Record set**—It took a lot of men and materials to build these dams—and construction records were established which rated high in the heavy construction industry.

At Bull Shoals—rated the eighth largest concrete or masonry dam in the world—concrete placement reached a top figure of 170,000 cu yd per month. The best day's run was 6,810 cu yd in August, 1950, while the biggest eight-hour pour was 2,485 cu yd. Employment on the Norfork Dam and powerhouse averaged 1,100 between 1941 and 1944.

As a matter of record, the first concrete was placed in Norfork Dam on October, 1941 and completed in November, 1944. The first concrete in the powerhouse was placed in 1943.

Those who follow dam construction will remember that Utah Construction Co., and Morrison-Knudsen Co., Inc., were the general contractors.

• **Near completion**—Records on Bull Shoals show that excavation for the dam was started in June, 1947. The first concrete was placed Sept. 24, 1948, and the last in 1951. The reservoir, which began filling a year ago, has already captured 2.3 million acre-ft of water.

Powerhouse construction began in May, 1950 and is scheduled for completion in November of this year. At present, work is being rushed on the installation of the four main generating units, for production of power this summer. Nine contracting firms, operating under the name of Ozark Dam Constructors, secured the $21.7-million construction contract for Bull Shoals Dam and a $5-million contract for the powerhouse. They are: Brown and Root, Inc.; Wunderlich Contracting Co.; Peter Kiewit Sons' Co.; David G. Gordon; Condon-Cunningham Co.; Morrison-Knudsen Co.; J. C. McGuire and Co.; and Chas. H. Tompkins Co.

The same contractors, under the name of Flippin Materials Co., also secured a $10.3-million contract for furnishing 3.8 million cu yds of crushed limestone concrete-aggregates (ENR June 23, 1949, p. 44).

Norfork Dam

Principal features: dam (concrete, gravity type); top length, 2,624 ft; base width, 200 ft; total height, 244 ft. Spillway (gated): length, 568 ft; tainter gates, twelve 40 x 28 ft. Control works: conduits, eleven 4 x 6 ft, discharge (max) 22,000 cfs; stilling basin, 568 x 182 ft. Reservoir capacity (acre-ft): dead storage, 544,000; hydropower, 707,000; flood control, 732,000; total, 1,983,000; reservoir area (max), 30,700 acres. Power facilities: penstocks, four 18-ft dia; power units, 2 initially, 4 ultimately; turbines (Francis, vertical-shaft) 49,000-hp each; generators, 35,000 kw each; annual power (2 units) 172,000,000 kwh. Major quantities: excavation, 850,000 cu yd; concrete, 1,508,000 cu yd; reinforcing steel, 1,990 tons.

Wage rate confusion hits N.Y. contractors

You are a bricklayer in New York City: one employer is legally entitled to pay you $3.55; another can legally pay you only $3.25 an hour. Which one will you work for?

This situation actually came about in New York last week. It rose from a decision by the Construction Industry Stabilization Commission that in effect, established two rates and two bargaining groups for the same trade in the same area. It opened up the possibility that it could happen in any trade, anywhere.

Here's how it happened:

There are two recognized bargaining groups in the city. An older and somewhat larger group—Building Contractors' and Mason Builders' Association of Greater New York, Inc.—and a smaller group known as the Associated Brick Mason Contractors of Greater New York, Inc.

By long custom the two groups negotiate separately, but normally achieve identical contracts with the metropolitan area's Bricklayers', Masons' and Plasterers' International Union, AFL.

This year, however, the associated brick group went ahead on its own to negotiate a contract after the mason builders had balked at union demands for 35 cents an hour more pay and changes in working conditions.

Having reached an agreement with the union, the associated brick group sent its agreement with the union to the CISC for approval. The mason builders filed an immediate strong protest, objecting principally to establishing of an area rate on this basis.

CISC heard no oral arguments, but debated the matter in subcommittee for several days and finally (July 3) approved the rate, 8-to-2.

As matters stood this week, members of Associated Brick could pay (retroactively to June 1, the expiration of their previous contract with the bricklayers) $3.55 plus fringe benefits amounting to another 29 cents, but the mason builders could pay only $3.25, plus fringe benefits.

For the last two weeks, in anticipation of the wage hike, bricklayers have been leaving ("not striking," say the union officials, "definitely not striking") Mason Builders jobs in such numbers that work of this group has shut down in many cases.

JOHN MULLIGAN, president of Associated Brick Mason Contractors, says: "We have had our own contracts since 1926."

• **The Associated story**—"We have no intention of engaging in controversies with any other employer group," says John Mulligan, president of the Associated Brick Mason Contractors of Greater New York, Inc., "especially when our interests are identical."

"However," he continued, "we are free agents and have been negotiating our own contracts since 1926."

Mulligan explained why the Associated group made their contract independently by pointing to the contract itself.

"We were not so much interested in wages as we were in conditions of employment. We feel we have made a good contract."

One of the reasons the Associated group was able to negotiate successfully stems from the fact that they are not bound by a master plan, according to Mulligan.

In New York City, most contractor trade organizations are part of a master group called the Building Trades Employers Association. The BTEA operates under a master plan intended to co-ordinate the wage agreements of all the trade organizations and maintain historic differentials.

Mulligan recognized the serious weakness of having two negotiating groups. "The union would like even more contractor trade associations to play off against one another," he asserted.

• **The brick masons' story**—John H. Eisele, president of the Building Contractors' and Mason Builders' Association of Greater New York, Inc. made the following statement:

"The Mason Builders' Association represents approximately 90 general building and masonry contractors, and in behalf of its members has engaged in collective bargaining for more than 60 years with the bricklayers' unions.

"It is also a matter of record that in the past the Mason Builders' Association has been officially recognized by a federal government agency as the historical or customary bargaining group in the New York area.

"For these and many other valid reasons we feel that the reported approval by the CISC of a 30-cent wage increase for the bricklayers, although confined to one bargaining group, will create chaos in an industry that has heretofore maintained stabilized and fair standards of work.

"We fully recognize the legal and moral right of the Associated Brick Masons and the unions to bargain collectively and reach agreement on wages, but we do seriously question the hasty action of the CISC and the denial of our petition for an oral hearing."

• **The CISC opinion**—The CISC disposed of the Mason Builders' protest like this:

• To the objection that it (and by inference not Associated Brick) is the customary bargaining agency, the CISC found the Associated group was just as customary an agency.

• To the objection that the $3.55 rate would exceed the 10% plus 15-cent formula, the CISC said that the Mason Builders mistakenly used the wage rate plus fringe benefits as the base instead of employing the wage rate alone.

• To the objection that the 30-cent rise would be unstabilizing, the CISC found that since no fixed relationship exists between bricklayers rates and other trades (CISC went back to '46) the rise would not be an unstabilizing one.

The CISC admitted that although the new rate was not an area rate, it would probably set the rate for the area. It said, "Needless to say, the commission's normal policy would lead to approving subsequent applications for permission to pay the same rate."

Grand Jury indicts contractor groups and unions for antitrust violation

Two Chicago contractor associations and two unions have been indicted by a Federal Grand Jury for Antitrust Law violations. The action is the first fruit of an investigation by the Department of Justice Antitrust Division which began in March.

Two counts were included in the indictments, one charging illegal restraint of trade and the second charging illegal combination and conspiracy to establish a monopoly.

Named in the lathing charge are the Employing Lathers' Association, Local 74 of the Lathers International Union, and two association members, H. D. Follett and E. D. Chouinard.

The Employing Plasterers' Association, Local 5 of the Journeymen Plasterers Society, and Union President Byron W. Dalton are the defendants in the second suit.

• **Conspiracy**—Lawyers of the Justice Department charged:

The unions and associations separately agreed to reduce the number of lathing and plastering contractors permitted to do business in Chicago. The lathing association encouraged Local 74 cooperation with money payments. Any contractor without union approval or who hadn't been a union member for five years was kept out of the employer associations. Some prospective lathing contractors couldn't meet union membership standards because they were not related by blood or marriage to Local 74 members. Plastering contractors agreed to boycott any general contractor who had a dispute with an association member.

The antitrust charge says the "conspiracy" has reduced the number of lathing contractors in the area from 95 to 36 and boosted costs artificially.

• **Penalty**—If convicted, the officials would face the maximum penalty of a year in jail and $5,000 fines on each count and the unions and the associations would face $5,000 fines on each.

The Grand Jury also made a presentment, which Federal Judge Philip L. Sullivan permitted Assistant U.S. Attorney Willis L. Hotchkiss to read but withheld it from the record, charging that the lathers' union has prevented Negroes from becoming apprentices, journeymen or contractors.

Chicago's Board of Education operates a tax-supported school for apprentice lathers, the report declared, but refuses to enroll Negroes because the union will not accept them after they are trained. The Justice Department was advised in the report that the lathers' union prevents Negroes from working on federally financed projects, although contracts for such construction carry non-discrimination clauses.

Robert J. Witt, secretary of the Employing Lathers' Association until 1949 and now a lathing contractor, was indicted on a perjury charge.

Company fights WSB; denies wage overpay

Edgar I. King, chairman, and members John Gersting and L. C. Kesselman of the regional enforcement commission (WSB), heard the complaint against H. K. Ferguson Co., Cleveland, prepared and filed by Karl W. Stoffel, regional enforcement officer, June 27 in an all day hearing.

No decision was given, with attorneys for both WSB and Ferguson company given 15 days in which to file briefs.

• **Backing WSB**—Lined up back of WSB in this case was the Dayton District Trades Employers Association in the person of Ernest F. Jones, executive secretary, who admitted his organization was responsible for building the fire under the Enforcement Division of WSB in this case and forcing the issue into the open.

OTTO F. SIEDER, executive of H. K. Ferguson Co., fights overpayment charges.

Ferguson was accused of paying over-ceiling wages to bricklayers—a total of $19,528 between July 5 and Oct. 15, 1951—on a $5-million "hurry-up" National Cash Register job. Payment was made at the rate of $4 per day for subsistence and went only to out-of-town bricklayers imported to work on the job since the supply of local bricklayers was far from adequate.

Jones, testifying in behalf of WSB Enforcement Division, claims such subsistence payments were unknown in the Dayton area prior to Ferguson's act. When Ferguson inaugurated the subsistence payments, the DDTEA protested by telegrams to both the Cleveland and Washington offices of Construction Industries Stabilization Commission. Jones, on behalf of DDTEA, also endeavored to draw S. C. Allyn, president of NCR, into the controversy. Jones claimed that other Dayton area contractors faced workers' discontent because of the Ferguson opulence.

• **Rebuttal**—Ferguson company attorneys showed there was no government regulations prior to March 8, 1951, the date actual construction started on the project; that government's interpretation No. 1 to general Regulation No. 9, which said a company going into an area for purposes of construction must set rates in line with those in comparable industries, did not apply since there was no industry in the area operating comparable to Ferguson.

Ferguson officials also pointed out the construction project was a rush job with a government earmark on it, that while the demand was for the job to be completed in six months, Ferguson was able to finish the project in eight months only through substituting reinforced concrete for steel which couldn't be had and by hiring out-of-town and itinerant bricklayers.

Officers of bricklayers unions told the commission it was common practice to import bricklayers and skilled tradesmen into areas and pay them subsistence or transport expense when local supply was inadequate.

If the decision goes against Ferguson, there are indications it will appeal to the National Enforcement Commission in Washington within the required 30 days after the decision is made known.

PADUCAH ATOMIC ENERGY PROJECT was again shut down and the long line of craftsmen shown here was kept out of the project by a picket line of laborers.

Intra-union squabble ties up atom job

Mostly because laborers on the Paducah atomic energy project object to one man, 20,000 building trades employees were off the job last week.

The AFL Laborers' International Union and the F. H. McGraw Co., prime contractors on the job, urged the strikers to disband their picket lines and return to work. The plea went unheeded.

On the sixth day of the strike about 1,000 workers filtered into the project area, but could not work because not enough of them were on the job. The $500-million project remained shut down.

The strikers are members of the Laborers and Hodcarriers Union, AFL. They left their jobs two weeks ago because of an intra-union dispute.

• **The bone of dissent**—The Paducah project area is close to Illinois—just across the Ohio River. The laborers union decided that the ratio of Illinois men to Kentucky men on the project would be two to one. (The supply of labor on the Illinois side is larger than in the Kentucky area.)

Paducah laborers never liked the arrangement, and it has been a sore point ever since.

The manager of the labor pool—in effect the hiring boss—Evan Dale, was subjected to boos and catcalls when he pleaded with the laborers to return to the project.

Dale has been the chief target of the laborers since the walkout began. One of their avowed goals is his removal as head of the AFL pool.

The workers had also demanded a pay increase, which was granted by the Construction Industry Stabilization Commission. However, their demand for Dale's removal was not accepted.

The F. H. McGraw Co. is not involved in the dispute at all and the Paducah Building Trades Council labeled the strike "illegal and unauthorized."

McGraw fights WSB ruling, contends board erred

F. H. McGraw & Company, engineers and constructors, announced last week that it will seek a review from the Circuit Court of Appeals on the recent NLRB ruling which ordered the company to "discontinue preferential hiring in its labor contract with the International Union of Operating Engineers, AFL."

The McGraw company contends that the National Labor Relations Board erred in adopting a recommended finding by a trial examiner claiming that McGraw's contract with the Operating Engineers and its Local 181 in Paducah, Ky., was a violation of the Taft-Hartley Act (ENR June 26, p. 60).

A McGraw spokesman pointed out that the complaint filed by Albert G. Henry, which alleged unlawful discrimination and which initiated the proceedings before the NLRB, had been dismissed by the board upon the recommendation of the trial examiner. Also the board went far beyond the confines of the complaint as filed, or the hearing, by asserting a charge which had never been raised by any complainant and concerning which there was no evidence whatsoever produced.

The NLRB, according to F. H. McGraw & Co., further erred in extending its ruling to McGraw projects outside the Paducah area inasmuch as no evidence or proof was produced in connection with other projects.

The construction firm, which has its main office in Hartford, Conn., and is building the $500-million atomic energy plant near Paducah, Ky., emphasized the fact that of the many thousands of workers employed by McGraw at Paducah and elsewhere, not a single employee has complained of any discriminatory employment practice committed by the company.

Union-shop agreement void without non-Red affidavit

A union-shop clause negotiated by a union that has not filed non-Communist affidavits or financial reports with the National Labor Relations Board is illegal. That's the proviso Taft-Hartley makes in sanctioning union-shop agreements.

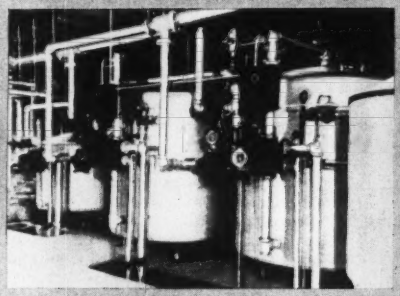
The labor board recently used this part of the law to deny a worker's request for a poll aimed at eliminating a union-shop agreement.

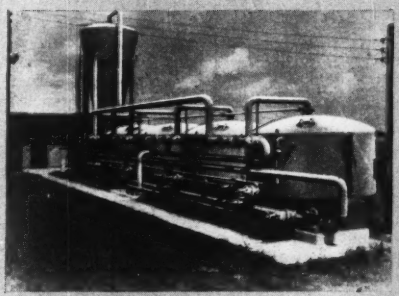
Under an amendment passed in 1951, NLRB elections among employees to get a union shop were dropped from Taft-Hartley. At the same time, however, the lawmakers preserved a provision whereby employees could petition the board for an election in order to get rid of a union shop.

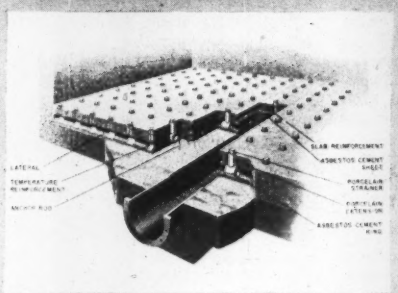
In an interpretation of this new amendment, the board said the union-shop clause negotiated by Local 415 of the United Paper Workers, CIO, with the Bare Paper Co. in Roaring Springs, Pa., was illegal since the union had not met filing requirements of Taft-Hartley. Therefore, the 3-2 majority ruled there was no enforceable security clause that employees had to vote to drop from their contract.

Chairman Paul Herzog and Member Paul Styles differed. They said the election should have been granted. They pointed out that, under the majority's decision, the clause remains in the contract and thus has a restraining effect on the workers, even though unenforceable. If it results in a discharge, an employee would have to go through involved proceedings to enforce his legal rights. Herzog and Styles felt the amendment was intended to permit escape from that kind of situation by a simple election.

4 STEPS TO BETTER WATER







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DEVASTATION IS SIMILAR, whether caused by an A-bomb, as at Hiroshima, Japan (1945), shown at left, or by an earthquake, as at San Francisco 1906, shown at right. Resistance to damage, too, is similar; thus, seismic design offers clues to blast design.

Where we stand on seismic and blast design

- **Both involve application of dynamic lateral forces**
- **Magnitude of these forces for design is uncertain**
- **Prediction of behavior of structures requires judgment**
- **The data do not warrant more than approximate analyses**
- **Nevertheless, these are yielding useful conclusions**

With the addition of man-made destructive forces to the unpredictable catastrophic blows of Nature, the problem of designing buildings to resist lateral shocks has become increasingly pressing. To see what can be done to save lives and property—principally, to re-appraise methods of designing buildings in the light of present knowledge of seismic and atomic-bomb explosive forces—400 engineers participated in each of two conferences on opposite coasts of the U. S.

One meeting—Conference on Building in the Atomic Age—held June 16 and 17 at Massachusetts Institute of Technology, Cambridge, Mass., was devoted entirely to a discussion of the effects of atomic bombs and what might be done to minimize damage to future buildings. Proceedings of this session may be obtained from Prof. Robert J. Hansen, Department of Civil and Sanitary Engineering, MIT, for $3 plus mailing costs.

The second meeting—Symposium on Blast and Earthquake Effects on Buildings—held June 26 to 28 at the University of California at Los Angeles tackled the problem of designing to resist both natural and man-made forces. It was sponsored jointly by the university and its extension division, and the Earthquake Engineering Research Institute, a non-profit organization with a membership of 33 west coast engineers and seismologists. Proceedings may be obtained from the Department of Conferences and Special Activities, University Extension, University of California, Los Angeles 24, Calif., for $5.

• **Data censored**—At both conferences it was evident from comments made by the speakers that much data have been collected, under government sponsorship, on forces developed by atomic bombs of various sizes and the effect of these forces on buildings. This information, however, is being withheld for security reasons. (If the forces are known, it might be possible for an enemy to calculate the energy released in an explosion and thus determine the sizes of bombs the U. S. has.)

Only a hint of the energy that may be released in an atomic explosion is available. This is given in a booklet published by the Atomic Energy Commission, "Effects of Atomic Weapons," which suggests that calculations be based on a "nominal" bomb, equivalent to about 20,000 tons of TNT, or 2×10^{13} calories.

Speakers at the conferences thus had to base their calculations on a hypothetical nominal bomb. But there is no way of telling whether there may now be available a bomb with a capacity two or 200 times this.

In view of the devastating forces involved and the present inability to gage them with a reasonable degree of accuracy, Prof. John B. Wilbur, head of the Department of Civil and Sanitary Engineering at MIT, reached the inevitable conclusion that: " . . . We must, for the most part, think in terms of partial measures: of dispersal to a degree that will discourage—though in no sense prevent—the existence of attractive targets; of shelter that will offer a reasonable degree of protection—though in no sense full protection—to the people seeking haven; of methods of building construction that have definite resistance to shock and blast load—even though few structures will be built that are actually bombproof."

• **Conference topics related**—Apparently thinking along the same line—and incidently pointing up the relationship between seismic and blast design—Charles S. Whitney, of Ammann & Whitney, New York City consulting engineers, also concluded: " . . . By careful design and selection of materials, the resistance of normal construction can be materially improved without increase in cost. These are the improvements which are usually incorporated in structures to increase their resistance to earthquakes and wind pressures, such as the use of rigid frames instead of bearing walls and careful integration of all the parts."

Other speakers also touched on factors common to both seismic and

blast design. For example, Sherwood B. Smith, technical advisor, Armed Forced Special Weapons Project, Washington, D. C., speaking at both conferences, pointed out that in Japan, reinforced concrete buildings designed to resist earthquakes offered the greatest resistance to damage by atomic blast. In this case, limiting radius to which heavy structural damage occurred was 2,000 ft. Closer to ground zero (directly under the detonation) the downward component of the blast crushed roofs. Outside of this range, the lateral component was more important in producing damage—and buildings are designed to resist large lateral forces.

Earthquake design has been required for west coast buildings since the San Francisco temblor of 1906, and more particularly since the Santa Barbara (1925), Long Beach (1933) and Seattle (1949) quakes. West coast engineers, thus have had extensive experience with lateral-force design. This has unified structural engineers of the west coast into a closely-knit group, as was pointed out at UCLA by John E. Rinne, structural engineer for Standard Oil Company of California.

The cost of lateral-force design can be significant, according to Henry J. Degenkolb, San Francisco structural engineer. He estimated that $12 million of the $400 million spent in 1951 for building construction in California was directly attributable to lateral-force design provisions of building codes.

• **'Quakes give no warning**—One of the greatest differences between an earthquake and an atom bomb is that some warning can be expected from the latter whereas a temblor may come at any time. This was shown in the 1933 Long Beach earthquake reported on at UCLA by R. W. Binder of Bethlehem Pacific Coast Steel Corp. Binder said that 85% of the 90 fatalities of that 'quake were due to falling debris or collapse of structures. Thus, the earthquake designer must protect occupants of a building as well as minimize economic loss.

• **Frangible walls useful**—On the other hand, structures designed for blast resistance can be so arranged that some elements will fail when the first part of the shock wave hits. This will protect other more important building components.

Prof. Bruce G. Johnston, University of Michigan, speaking at both

John B. Wilbur
"Further research is needed . . . "

John Rinne
". . . Think in terms of partial measures"

MIT and UCLA, described studies of buildings—particularly industrial types—with walls that would blow away almost immediately, thus reducing the loading on the main structural elements. This assumes, of course, that workers in such factories would have time to seek shelter.

• **Bomb-resistant shelter**—Protection of personnel as well as almost complete safeguarding of vital installations can be provided by underground or semi-buried construction, according to Martin D. Kirkpatrick, who heads up such work for the Chief of Engineers, Department of the Army. Such structures, with arched sections and baffled entryways, may be designed for various degrees of optimum protection for a given expenditure as afforded by the semiburied type, which has the advantage of earth cover, Kirkpatrick said at MIT.

Small family-type shelters were described at MIT by Arsham Amirikian, Chief Designing Engineer, Bureau of Yards and Docks. He suggested use of thin-shell precast concrete. In a discussion, Jacob Feld, New York City consulting engineer, described a pumice-concrete unit now available (ENR May 10, 1951, p. 27).

• **Design procedures**—General and specific procedures for blast and earthquake-resistant design were covered in some detail at both meetings. At UCLA, a panel of six west coast engineers presented and discussed seismic design methods. At both MIT and UCLA, Prof. Nathan M. Newmark, of the University of Illinois, spoke on design of structures subject to dynamic loads. He called the attention of the groups to the fact that there are many similarities between the behavior of structures under earthquake and blast forces. But he said there also are differences. Earthquake design requires a considerable application of judgment, whereas blast design is more amenable to analysis even though there are uncertainties.

Rapid methods of dynamic analysis need not be extremely accurate because precise values of the magnitude of loading and of the resistance of the structure are not available in general, Newmark said.

General procedure for dynamic analysis, he continued, is the determination of the motion, as a function of time, of any number of separate concentrated masses supported by a flexible but weightless system of framing. The forces acting on the framing can be determined when the deflections of the masses are specified even though the framing is not behaving elastically. One of the most powerful methods for estimating the maximum deflection is based on the principle of Conservation of Energy. But such procedure and such simplification of a building for dynamic analysis, Newmark said, requires a good deal of engineering judgment.

Design of buildings for atomic blast was boiled down at UCLA by Boyd G. Anderson, associate partner, Ammann and Whitney, New York, into these steps:

1—Calculate the pressure-time curve for the particular dimensions and characteristics of the building.

2. Select the framing arrangement to be used in supporting the structure.
3. Determine the paths by which the building will collect the blast load and distribute it to the foundations.
4. Assume member sizes, design the members and develop resisting functions and design constants for the various members. Include the effect of high rates of loading.
5. Specify the damage criteria that will be accepted for various parts.
6. Calculate the motions of the various members to see whether the deformations of the selected members are within the specified amount.

• **Seismic forces estimated**—The most thorough presentation of earthquake design was made by John E. Rinne, structural engineer for Standard Oil Company of California. Rinne's presentation centered around proposed building-code provisions for seismic design. The proposal, based on dynamic considerations, was developed by a committee of ten San Francisco engineers jointly representing the Structural Engineers Association of Northern California and the San Francisco section, American Society of Civil Engineers (ENR Dec. 1, 1949, p. 28).

The ground motion, Mr. Rinne said, imposes a vibratory movement on a building that can be resolved into equivalent lateral forces at various floor levels. These forces are resisted by a shear at the base. The base shear can be calculated for design purposes by multiplying a lateral-force coefficient by the weight of the building. The coefficient, in turn, is determined from an approximation of the period of vibration of the building (based on U. S. Coast and Geodetic Survey measurements of a large number of buildings) and a curve that develops the coefficient as a function of the period.

Rinne emphasized that his presentation is the best the committee could develop at present and that further research is needed.

Construction colleges urged to fill gap

Recognizing a need for men with a broad knowledge of the construction industry—trained in business methods as well as in design and construction methods—Tyler S. Rogers, of Owens-Corning Fiberglas Corp., called attention to "a promising educational opportunity" in a talk given to The Producers Council, Inc., in New York City, June 23. Following is an abstract.

There is a visible lack of appreciation, respect and understanding between the design professions, the contractor-builder group and the manufacturers and suppliers of materials.

Architects know architecture, builders know construction methods, manufacturers know their own and competitive materials. But very often architects do not know enough about building materials and methods to win the respect of these other groups, and very frequently builders and materials men do not understand the problems of the architect sufficiently to deserve the trust of the professional designers.

This narrowness of interest works against the unity and integration of the construction industry. Its course, I believe, is rooted in our present educational system.

At least there is a striking parallel between these industry practices and our educational methods. Each of the arts and sciences, which, together with business and finance must be brought together to create the roads and bridges, the towns and cities and the buildings we need, is now taught—and practiced—as a separate thing by itself. Each study is isolated from the others by a vacuum of self interest.

• **Business side emphasized**—What I propose as a start toward improvement of these conditions is the organization, within existing institutions of college or university grade, of "Schools of the Construction Arts and Sciences." A better title would be one that embraces business administration as well, because the business of construction should have equal recognition with the arts and sciences.

In such schools, the student body would have as a common interest the immense potentials of the whole industry. The faculty, though made up of men competent in many fields of science and economics, would see and respect the part each played in advancing construction.

For the first time, I believe, we would then have forces working toward the integration and unity of our industry. We would be training men who would be specialists in these several arts and sciences, as we do now, but without barriers between them and with mutual understanding and respect for each other's field of interest.

Such a school could graduate men skilled in any of the activities that make up the construction industry, according to each student's interests and talents. It could graduate architects who were pure designers, if they wished, or architects who specialized in materials and construction methods, or men skilled in the administration of large projects. It could graduate engineers who could be the indispensable associates of architects, or the equally indispensable managers of contracting firms, or the equally necessary independent consultants. It could graduate men trained to organize and finance great land developments and create or improve whole cities, and other men who could make needed building products and sell them soundly on their properties and appropriate uses. This school could offer post-graduate courses of advanced type for mature men who wanted to broaden their knowledge or keep pace with the newest developments. It could become a great research center for the industry, using research as an important educational tool.

Such a school would effect a marriage of the related arts, sciences and businesses. Its faculty would be found in existing schools of business administration, architecture, land planning, engineering and law. It would draw upon such special fields as climatology, the social sciences, public health, labor management, advertising, and salesmanship.

But I do not propose new institutions nor diminishing in any way the importance of the present basic courses in the arts and sciences and business enterprises. These must remain untouched for there will always be need for men fully and exclusively trained in each area of knowledge.

• **Diversified courses**—Rather, it is my proposal that these Schools of Construction Arts and Sciences be looked upon as new fields of educational opportunity for our great universities. While they could draw in many cases upon the great talents of the existing faculty, the new courses would broaden, rather than narrow, the areas taught by these men. In fact, in most cases the same courses would be taught as they are today, except for a broader concept of the relationship between them. Each study would be taught as the part of a whole, instead of as an end in itself.

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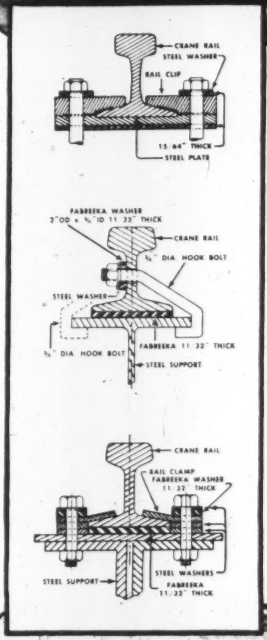

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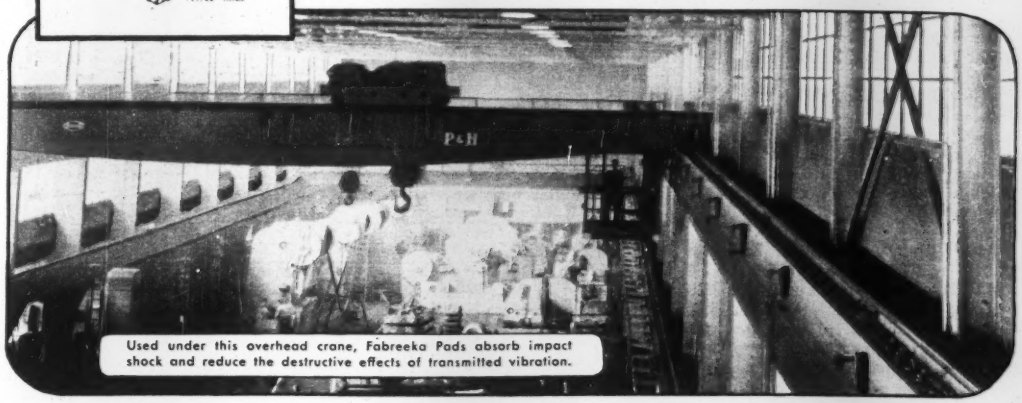
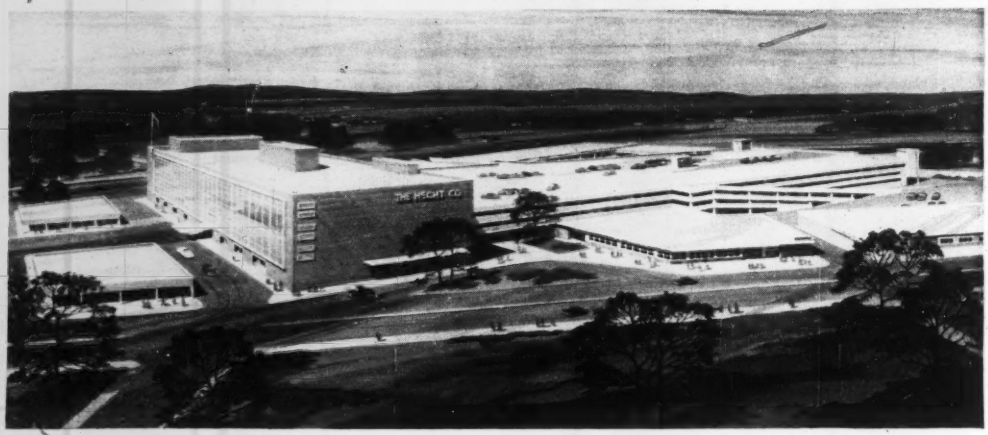


Used under this overhead crane, Fabreeka Pads absorb impact shock and reduce the destructive effects of transmitted vibration.



HUB of Hecht Co.'s new 18-acre shopping center in Arlington, Va. is 570x216-ft parking building that connects directly to main store. There are stalls for 1,600 cars in its five parking levels.

Nation's largest parking building completed

FINISHING TOUCHES are now going on what is probably the largest multi-story parking building in the United States. Focal point of The Hecht Co.'s new suburban shopping center at Arlington, Va., the building can accommodate 1,600 cars on its five parking levels.

Noteworthy is the structure's unusual design. On all four sides, two-way flat-slab floors cantilever a half-bay beyond the outer columns. This is one of the first instances where cantilevers of such great length (15 and 13½ ft) have been used in flat-slab construction.

In plan, the shopping center, named "Parkington," resembles a futuristic airplane. The 570x216-ft parking building can be likened to the fuselage. Attached to one end is the 300,000-sq ft Hecht department store, four stories high, which represents the nose. One-story and basement neighboring stores form the swept-back "wings."

The entire project will cost $15 million—about $3 million is for the garage and $6 million for the main store. These two units are already in use, while 20 of the projected 30 satellite stores are to be opened in September.

• How large a parking building?—Initial planning revolved around the basic requirement to secure adequate parking. Area relationships were used. Hecht figured that a 300,000-sq ft main store was needed to serve the surrounding and growing community of 300,000 people. Neighboring stores would contain about 100,000 sq ft.

A ratio of 2 sq ft of parking space per sq ft of gross building area was employed. Since 160,000 sq ft of surface parking space accommodating 355 cars was available around the 18-acre site, a parking building containing 640,000 sq ft was required.

R. H. Tatlow, president of Abbott, Merkt & Co. who was the engineer, comments that a ratio of 3 to 1 is normally more desirable. But because many of the Parkington shoppers come on foot or by public transit, a 2 to 1 ratio suffices. In addition, 420 cars may be parked in the residential streets surrounding the center. The ratio of parking space to actual selling area is 2.8 to 1.

• Why cantilevers?—It was clear that the most economical design of the garage called for two-way flat slabs with drop panels. Cantilevers a half-bay long were employed on all four sides for three reasons: The second, third and roof levels were to tie into the main store, while a 45-ft. wide arcade adjacent to the main store substitutes for the first floor there; display windows in the Hecht store would be obstructed if exterior columns were flush against them, but with cantilevers these columns are 15 ft. away. Second, columns adjacent to neighboring stores could be eliminated. (Retail establishments are situated along the other side of the arcade, also reducing ground floor parking space.)

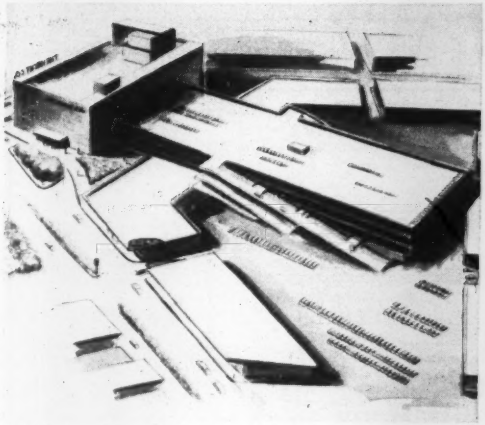
Finally, this construction allows a row of diagonally parked autos between the exterior column line and edge of the cantilever. Quicker parking is said to result if cars can turn off both sides of driveways. Had normal flat-slab design been used, the outermost driveways would have had to be right next to the exterior walls.

• Final design—The completed building has reinforced concrete columns spaced 30 ft on centers along the east-west 570-ft dimension and 27 ft on centers along the 216-ft width. Cantilevers are 15 ft at each end and 13 ft 6 in. on each side.

Floor-to-floor heights are 10 ft. Arrangement of parking levels and how they tie into main store is shown in Fig. 1. The easterly 315 ft has five levels (ground, mezzanine, second and third floors and roof). The second, third and roof levels are continuous through the 255 ft nearest the main store, while the mezzanine ends and the ground floor, here only 17 ft below second floor, are occupied by neighboring stores and the arcade.

Shoppers can enter the main store from all levels of the parking building. The second level is flush with a main-store floor (floors are spaced 15 ft apart thereafter). Customers wishing to enter from the third and roof levels walk only 5 ft up or down.

• Slab details—The two-way slab is 10¼ in. thick and is broom-finished. Drop panels measure 10½x9½-ft by 5¼ in. deep. Column capitals are 6½ ft in diameter. Carrying a load of 1,007 kips, the largest column is 34 in. in diameter.



PLAN of center resembles a modernistic airplane. Note ramp that provides direct access to every level of garage.

FLAT-SLAB FLOORS CANTILEVER a half bay on all four sides. Columns are spaced 27x30 ft. Arcade is shown.

Cantilever details are shown in Fig. 2. At column bands, drop panels are continued to the second line of columns. Note the large amount of reinforcement required.

A 2,500-psi concrete mix was used for the floor slab while column mixes varied from 2,500 psi (at top floor columns) to 3,750 psi used for first floor supports.

Except on the second floor over the arcade and neighboring stores where the load is 266 psf, the flat slabs were designed for a total load of 222 psf. It breaks down as follows: Live load 80 psf, slab 132 psf, drop panel 10 psf. The second floor portion has an additional 44 psf due to a 3½-in. thickness of protective concrete. The ground floor consists of an asphalt macadam wearing surface laid right on the ground.

Sides and one end of the building are open except for a 3-ft high 7½-in.

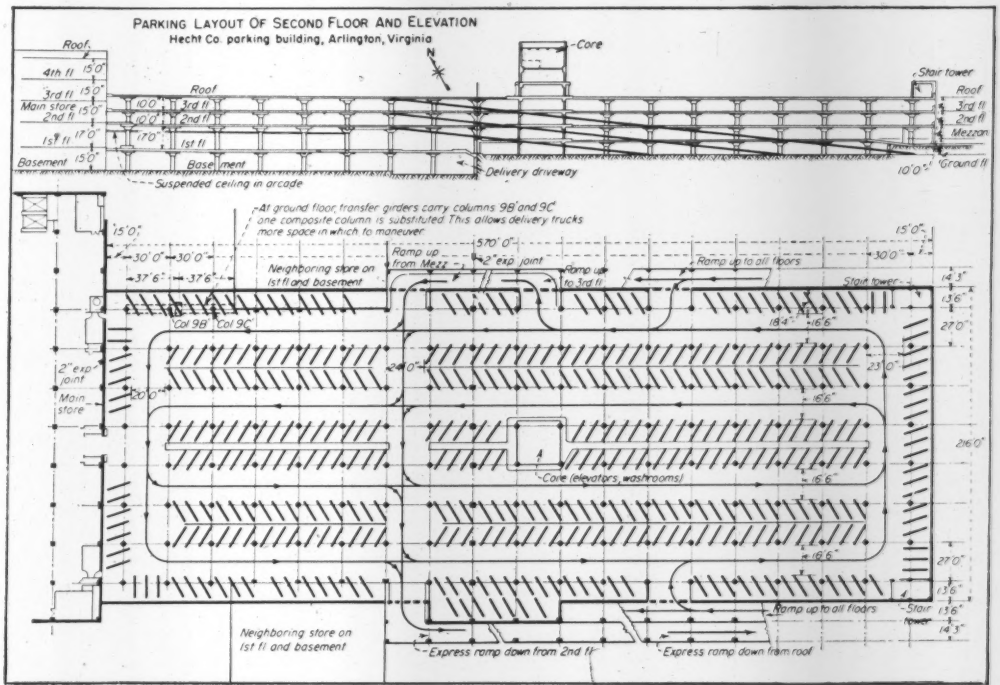

PARKING LAYOUT OF SECOND FLOOR AND ELEVATION
Hecht Co. parking building, Arlington, Virginia
Roof
4th fl 15'0"
3rd fl 15'0"
Main store 15'0"
2nd fl 15'0"
1st fl 17'0"
Basement 15'0"
Core
Stair tower
Mezzan
Ground fl
Delivery driveway
Suspended ceiling in arcade
At ground floor transfer girders carry columns 9B and 9C one composite column is substituted This allows delivery trucks more space in which to maneuver
Ramp up from Mezz
2" exp joint
Ramp up to 3rd fl
Ramp up to all floors
Neighboring store on 1st fl and basement
Col 9B
Col 9C
2" exp joint
Main store
Core (elevators, washrooms)
Express ramp down from 2nd fl
Express ramp down from roof

FIG. 1—CANTILEVERS allow parking along perimeter so cars can turn off both sides of outermost driveways. Note location of 75-ft long steel transfer girders (at upper left). Trucks delivering goods in basement needed more space in which to maneuver.

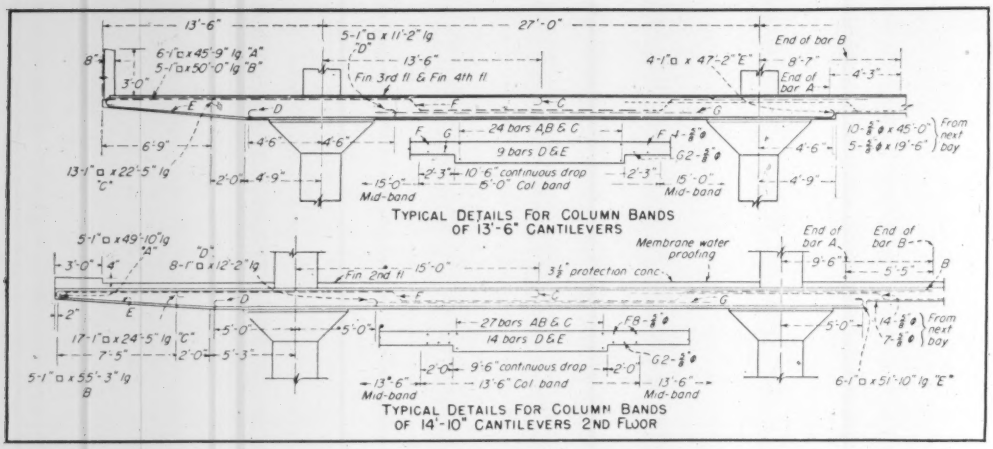

TYPICAL DETAILS FOR COLUMN BANDS OF 13'-6" CANTILEVERS
TYPICAL DETAILS FOR COLUMN BANDS OF 14'-10" CANTILEVERS 2ND FLOOR
Membrane water proofing
3½" protection conc.
End of bar A
End of bar B
Mid-band
Col band

FIG. 2—DETAILS of typical cantilevers. Parapet walls 3 ft high act as railings around open perimeter of parking building.

thick parapet wall at the ends of cantilevers.

Two-inch expansion joints at all levels separate the parking building from the main store. A rubber-based material with copper chips is used. Another 2-in. expansion joint has been placed crosswise 255 ft from the main store. One-inch joints have been employed where the garage abuts neighboring stores.

• **Parking diagonal**—Parking in the building is on a diagonal of 68 deg, stalls are 8 ft 3 in. wide, while aisles are 16½ ft wide. After a customer parks his own car, he walks an average of less than 300 ft to the main store.

If he wants to go to one of the neighboring stores, he uses an elevator housed in a 27 x 30-ft core running through the entire building.

• **Express ramps**—Extremely swift movement of cars in and out of the garage is made possible by a uniquely designed system of ramps. Two of these, one on each side, provide direct entrance to every parking level. The other south side ramps are for direct exit from each level, while ramps on the north side allow interfloor travel (little of which is contemplated).

There are three ramps on the south side. The top one has two roadways. The inside lane, 11½ ft from curb to curb, provides direct entrance to every parking level. Transition from the sloped ramp to the flat floor is accomplished with a warped section. The outside lane, having 10½-ft roadway, is for express exit from the roof.

The two bottom ramps on the south side allow direct exit from the second and third parking levels. Clearance between ramps varies from 7 ft 1 in. to 8 ft 11 in., depending on supporting beam depths.

Exit from the mezzanine level is provided by a ramp at the middle of the east end of the building.

All ramps are sloped at 11.1% (10 ft in 90 ft). They are composed of 6-in. reinforced concrete slabs topped with a 1-in. wearing surface. Top ramps on both sides have a 1-in. waterproofing layer in addition. Railings for the south side ramps are 51 in. deep, with thicknesses varying from 12 to 16 in. The between-floor ramps have 36-in. deep, 8-in. thick railings.

Much thought was given to truck movement and delivery to all stores. The ideal solution would have been to place everything underground. Excessive costs made necessary the compromise of having a truck ramp lead into the basement of the garage, which extends only 255 ft from the Hecht store. Receiving platforms for all stores in the shopping center are located here.

• **Steel transfer girders**—The location of Hecht's main store receiving platform posed a very difficult problem for the designers. If building columns 9B′ and 9C′ (see Fig. 1) were continued through the basement, large trucks would have been unable to negotiate through the clear space between columns of only 27½ ft.

Heavy steel transfer girders were designed to carry these columns. One oval-shaped composite column was substituted to yield 37½-ft clear spans on each side.

Point loads on 9B′ and 9C′ are 785 and 935 kips respectively. They

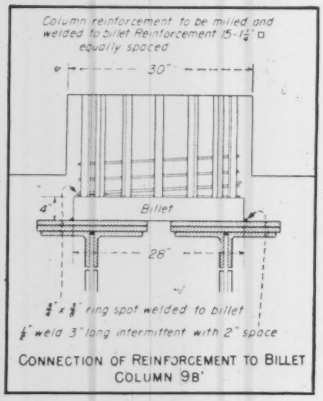

Column reinforcement to be milled and welded to billet Reinforcement 15-1¾" □ equally spaced
30"
Billet
28"
⅜" x ⅜" ring spot welded to billet
⅜" weld 3" long intermittent with 2" space
CONNECTION OF REINFORCEMENT TO BILLET COLUMN 9B'

FIG. 3—UNUSUAL connection of concrete column resting on the steel transfer girdders is shown.

DESIGNERS Fred Rode of Edw. E. Ashley, Hermann Schoenfeld of Abbott, Merkt & Co., and Pierre Bezy of Kahn & Jacobs.

over-all service...

The responsibility of the Torrington engineer does not end with a recommendation for a particular type of anti-friction bearing. He makes every effort to "follow through" to see that the bearing continues to give the best possible performance, with a minimum of maintenance.

Over-all service—starting with the original design and continuing through in-service operation—has helped to produce the *lasting* solution to the friction problems of many manufacturers. Why not discuss *your* application with a Torrington engineer today?

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McKIERNAN-TERRY PILE HAMMER

drives 304-ft steel pile

Sets record for Long Pile Driving on Meadville, Pennsylvania relocation job

"We put this 14-in. H pile down 304.3 ft with a McKiernan-Terry S-8 Single-Acting Pile Hammer." That's the statement of L. A. Meyer, superintendent for S. J. Groves & Sons, contractor on this Meadville, Pa. bridge relocation job.

Naturally a powerful McKiernan-Terry Hammer set this impressive pile driving record. With a 26,000 foot-pound blow, the McKiernan-Terry S-8 successfully met varying ground conditions. Piles about 50 ft apart encountered both light and heavy resistance to penetration. Lengths averaged 170 ft with differences of as much as 100 ft between piles next to each other.

On record-making or regular jobs, McKiernan-Terry Hammers always insure profitable pile driving. Complete McKiernan-Terry line includes 16 sizes of hammers and 2 sizes of extractors. Write for bulletin giving full details.

L. A. Meyer, contractor's superintendent, standing alongside the record-depth pile driven by McKiernan-Terry Hammer.

A McKiernan-Terry S-8 Single-Acting Pile Hammer driving long-length steel piles for relocation work on a five-span bridge near Meadville, Pa.

MK 315

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Plants: Harrison, N. J. and Dover, N. J.

caused a maximum bending moment of 8,680 ft-kips at 9C′. Two plate girders were used for each span, the left pair 46 in. deep, the right pair 49 in. deep. All girders are of normal single and cover plate design. Extra stiffeners counteract the effect of the cantilevered floors above.

Connection of the concrete columns to the steel girders is of particular interest. A ⅜-in. square ring was spot welded to a 4-in. billet plate and served as a guide for column reinforcing bars, which also were welded to the billet plate (see Fig. 3).

Parking in the new building will cost shoppers 5 cents for the first three hours. Thereafter, a charge of 10 cents per ½-hr. is levied, mainly to discourage all day parkers.

• **Credits**—The following firms designed and built the parking building and stores: Abbott, Merkt & Co., engineer; Kahn & Jacobs, architect; Edward Ashley, mechanical engineer—all of New York City; and Prescott Construction Co., Washington, D.C., general contractor. Hermann Schoenfeld of Abbott & Merkt designed the cantilevered flat slabs. George Quirk and Harold Melnicove directed the project for The Hecht Co.

Bigger airplanes force runway revamping

Technical advancement of aircraft design is having its effects on airport construction. With constant development of larger and more powerful planes, stimulated by our defense program, airport facilities are falling behind needs. Runway design and construction is one phase getting new attention in order to accommodate the trend in aviation. Here's a case where construction is already underway:

Tucson, Ariz., municipal airport is getting a 5,700-ft addition and an existing runway is being rebuilt to a total of 12,000 ft for use by the Air Force's glamour bomber, the giant B-47. Work completion is scheduled for August.

The $1.4-million new section is being constructed by the Del E. Webb Construction Co. of Phoenix and the San Xavier Sand and Rock Co. of Tucson.

The job is for Grand Central Aircraft Corp., operating under an Air Force contract. Jet bombers are flown from the Boeing plant, Wichita, Kan., to Tucson for modification work.

The old 6,300-ft section, being rebuilt, required 6-in. asphalt on top of the 8 to 10 in. gravel base.

The new section is being built with about 20 in. of compacted gravel under 3½ to 4 in. of asphalt. The two warmup ramps at either end of the runway are concrete, 15 in. thick to withstand the 100-ton weight of the big bombers.

The main runway is standard 150-ft width and will have 200-ft shoulders on each side treated with a dust palliative.

A 500-ft runoff strip extends from each end of the runway. Treated with liquid asphalt it will prevent dust and provide a safety factor for planes that won't stop.

The runway extension is part of a $5-million airport project undertaken by Grand Central for the Air Force. Under the contract, the company will build an electronics building, a production line ramp and new production equipment.

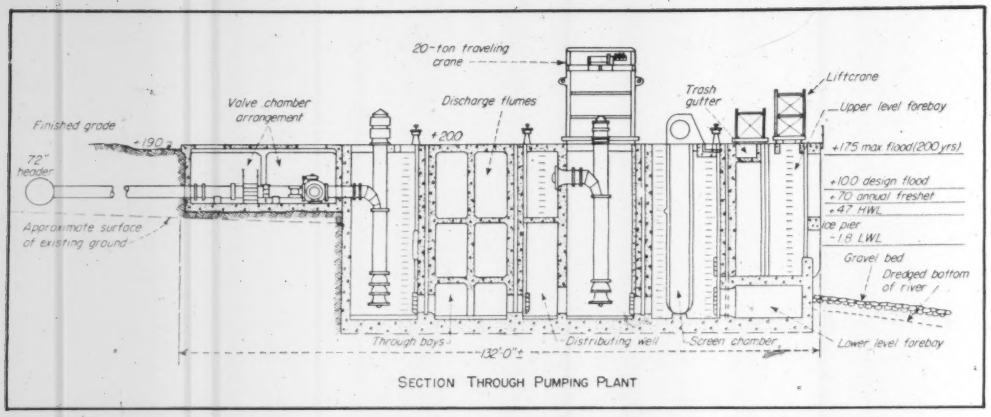
The City of Tucson also plans a number of projects for the airport including a new terminal building, control tower and hangar, to be located to the east of the main runway. The approximate cost of these projects, it has been estimated, will be $3.9 million.

More than $10 million has been spent on the airport's physical plant in its 11 years of existence. Tucson has invested $225,000 of that, the airport authority about $450,000 and the rest has come from the federal government.

CONCRETE is poured over the reinforcing steel of the new warmup apron on Tucson Municipal Airport. The aprons, located at the ends of a 12,000-ft runway, will withstand the 100-ton weight of the Air Force's new B-47 bombers.

"SUPER" Stan Bateman keeps the job rolling for Del E. Webb Construction Co. Completion date is set for August. Other contractor on the job is the San Xavier Sand and Rock Co. of Tucson.

CONSTRUCTION KINK is worked out by using a standard fork lift to pull rods from forms used in containing 15-in. concrete pour. The two-man rig replaced a more expansive three-man factory rig.



PUMPING PLANT at bank of Delaware River will begin next month to feed 250 mgd to a thirsty steel-making operation. Operating floor is plant's roof; there's no superstructure.

Big Steel builds a waterworks

CONTINUITY OF SERVICE . . . That was the chief concern of U. S. Steel in directing design of a 250-mgd industrial water supply for mammoth Fairless Works in Morrisville, Pa. (ENR May 15, p. 51).

Any complete shut-down in water delivery would mean a full-scale and extremely costly stoppage in steel-making. So four things were done in design to assure water for at least a minimum operation that would prevent damage to mill equipment:

- A cellular pumping plant structure permits removal and repair of any individual pumping unit or other item of equipment without interrupting service of other units.

- A 13-mg settling basin in the system doubles as water storage space that will give time needed to get emergency pumps going in case of electric power failure.

- A 60,000 kw steam power plant is back-stopped by connection with Philadelphia Electric.

- A pair of steam driven pumps in the power plant can take over in emergency to draw 70 mgd back through the power station's usual discharge line and deliver it to sustain minimum operations throughout the mill.

• Distinctive pumping plant—Service water will be drawn from the Delaware River through the pumping plant pictured above. Vertical turbine pumps will have a low-lift capacity of 285 mgd and a high-lift capacity of 134 mgd.

Water will enter the riverside pumping plant at normal levels from El −1.8 to +4.7, varying with tide and discharge. The plant's operating floor is at El 20, 2.5 ft above 200-yr flood stage.

Gates, trashracks, and moving screens protect the pumps.

Low-lift pumps (four 46,000-gpm and two 16,000-gpm units) lift water to a distributing chamber in the pumphouse structure and on to the settling basin for 80-min. detention. From here, half flows through a 72-in. line to the steampower station as cooling water; half flows back in a flume to the pumping station—to the wet well of the high lift pumps. From here it goes into the plant service water distribution system, fed by four 20,000-gpm and two 6,000-gpm pumps.

• No superstructure—The pumping plant is of reinforced concrete, and it is entirely below grade; operating floor level is just a foot above grade. No superstructure shelters motors, screen drive nor lift cranes which ride tracks over gates and trash racks.

Only semblance of superstructure is the shed enclosing the 20-ton traveling gantry crane, installed for removal for maintenance of any one of the station's twelve pumping units. This shed, pictured on p. 41, is a steel-framed structure with corrugated sheet steel walls and roof. Rolling doors at both ends permit entrance to the crane shed and permit the crane to straddle equipment to be hoisted.

The shed is caster-mounted with double-flanged track-riding wheels. Tracks set in the operating floor slab have a 16-ft gage and are located to straddle every piece of pumping equipment in the plant. The traveling crane-shed can be moved manually or by rubber-tired tractor both longitudinally and transversely across the floor, switching direction on manually operated turntables set in the 40-lb ASCE rails at appropriate points in the rails.

Turning the roller-bearing casters 90 deg is the job of one man using a bar placed in a hole in the caster for that purpose. The 16-in. dia track turntable turns with the wheel.

The 20-ton gantry crane enclosed in the shed has its hook 15-ft above operating floor level—high enough to hoist out any pump in the plant. Removable slabs in the floor permit access to the valve chamber.

• Floating basin controls—The 13-mg, four-compartment clarification basin through which all steel mill service and cooling water passes is a 600 x 250 x 13-ft reinforced concrete structure. To assure a proper skimming despite varied water level rates there is a floating weir on the basin. This permits operation through a 5-ft fluctuation of water level.

Besides clarifying the service water supply this settling basin provides the all-important storage on the line, mentioned above. This storage (up to 5 mg usable) is figured as a cushion in case of electric power outage. It would feed the mill enough water to prevent its shutting down during time it will take to get steam-powered pumps in the power plant started. Then, these

RIVERFRONT AREA at Fairless Works is a broad expanse of water and waste water facilities. Settling tanks will double as the system's only storage capacity.

auxiliary pumps could supply water at the rate of 70 mgd for as long as necessary.

Flow of water from the auxiliary pumps would suffice to prevent damage to blast and open-hearth furnaces and to the coke plant until normal water service is restored.

Plant service and cooling water supply for distribution to the mill is to be shock chlorinated at the pumping station to prevent slimes from developing in pipelines. Pipe for service water is all steel in sizes below 20-in. dia. reinforced concrete and prestressed concrete in the larger sizes, except at bends and major connections, where it is steel with protective wrapping.

Portable water is to be distributed in cast iron pipe and will come from a Ranney water collector rated at 5 mgd and driven to a depth of about 50 ft near the Delaware River. Two more ground water collectors with a total estimated yield of 20 mgd will supply special process water of necessarily higher quality than river water to rolling and plating operations.

• **Extent of work** — Hydrotechnic Corp., of New York, has had overall responsibility for design of all potable and industrial water supplies, drainage, sewage and industrial wastes facilities for Fairless Works. In all cases this work started and ended at building lines. U. S. Steel engineering all indoor piping, pumping, etc.

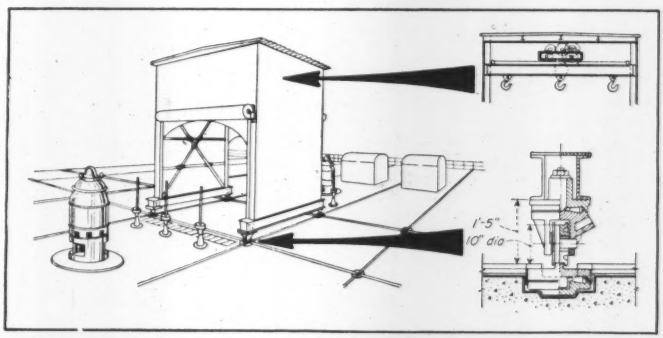
Some of this work was let out: John Baffa, New York consultant, did certain portions of the wastes works and sanitary sewage disposal; Knowles Associates and Buck, Seifert & Jost, both of New York, assisted on phases of the waste treatment.

(Industrial wastes disposal facilities of Fairless Works will be covered in next week's issue.)

Despite this spreading of the load, Hydrotechnic Corp. worked its design forces many months on a two-shift basis. The job was assigned on October 17, 1950. By December 19, 1950, preliminary drawings had been produced. The go-ahead came in January, 1951, and drawings were kept rolling off the boards at a rate of almost two-a-day from then until very recently. Now there remain about 3 months work to be done, mostly on field application aspects.

For Hydrotechnic, Angus D. Henderson and Hugh MacDougall have supervised the design conceived by Ross Nebolsine, president.

For U. S. Steel's construction engineering bureau, S. Landen is chief engineer; William Leslie is assistant chief engineer; George Larson is sanitary engineer. Steve Curtis is project manager in the field.



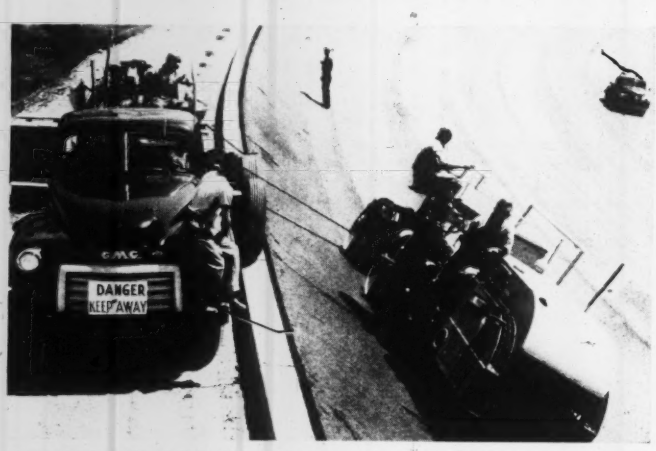
TRAVELING CRANE riding rail grid on operating floor slab can straddle and remove any pumping unit. Caster wheels turn with track switches. Steel shed encloses 20-ton crane. Otherwise this operating floor is unsheltered.

Pipeline network analyzer installed in Midwest

A pipeline network analyzer used to solve problems involving pipeline flows and pressure losses in pipeline networks has been installed by Midwest Research Institute in Kansas City, Mo. The McIlroy pipeline network analyzer is one of three such devices in the United States. The others are at Washington State College and Cornell University (ENR Aug. 30, '51, p. 35).

Once the analyzer is set up for a specific network flow problem, the answers can be obtained in about half an hour, where formerly it took days and weeks by trial and error methods. The analyzer uses a system of electrical analogies for physical factors involved in networks carrying water, oil and natural gas, as well as steam heating networks and air-conditioning systems.

WANT TO RUN A ROLLER ON A 45-DEG ANGLE? The answer is simple, hang the roller by cable from a specially-built heavy truck at the top.



SUSPENDED BY CABLES from the truck at left, bituminous paver puts down asphalt paving on steeply-banked turn of auto speed-test track.

Paving speed bowl: Done with strings

When officials of the General Motors Proving Ground at Milford, Mich., needed to re-pave the 3.8-mi speed loop and its three steeply banked turns, they took an obvious but not simple—step by hanging the bituminous paver and the roller from the steep side of the curves.

The company worked out basic construction procedures on small-scale models built in their shops, then called in manufacturers to modify their standard paver and 15-ton three-wheel tandem roller into dished-contour units, bringing in also a cooperative contractor, the Detroit Asphalt Paving Co., to do the job.

On the steep upper slopes of the banked curves, this was the paving procedure.

A road was graded at the top of the bank of each curve, and a 1x3-ft concrete curb, buried 2 ft deep, built along the top rim of the turn.

The banked slopes then were paved in 10-ft strips, with the modified paver, supported by a winch line from a tractor traveling the top roads. An asphalt receiving hopper was mounted on the front end of the tractor, to discharge to a belt conveyor and chute into the pavers hopper.

Rolling followed immediately with a modified diesel-drive roller supported by a winch mounted on a big truck also operating on the top road. Both tractor and truck carried special horizontal wheels to bear against the top curb.

• **Mock-up tests scheme**—Before starting these operations—and in order not to take the speed curve out of service completely—the General Motors Company went to the expense of building a mock-up section of the worst conditions—200 ft long—where newly modified paving equipment could be tried out, any difficulties ironed out and crews trained in advance of tackling the final job.

The original speed loop was built in 1926. It was an egg-shaped oval with three banked turns, paved with concrete and the steep slope sections were placed literally by hand.

The track was used by Army Ordnance during World War II for tank testing, which knocked the pavement into bad condition by the end of 1945, when it was turned back for civilian use. At first, General Motors patched up the pavement as best possible by applying an asphalt overlay on the flat stretches and as far up the curve banks as standard equipment could reach.

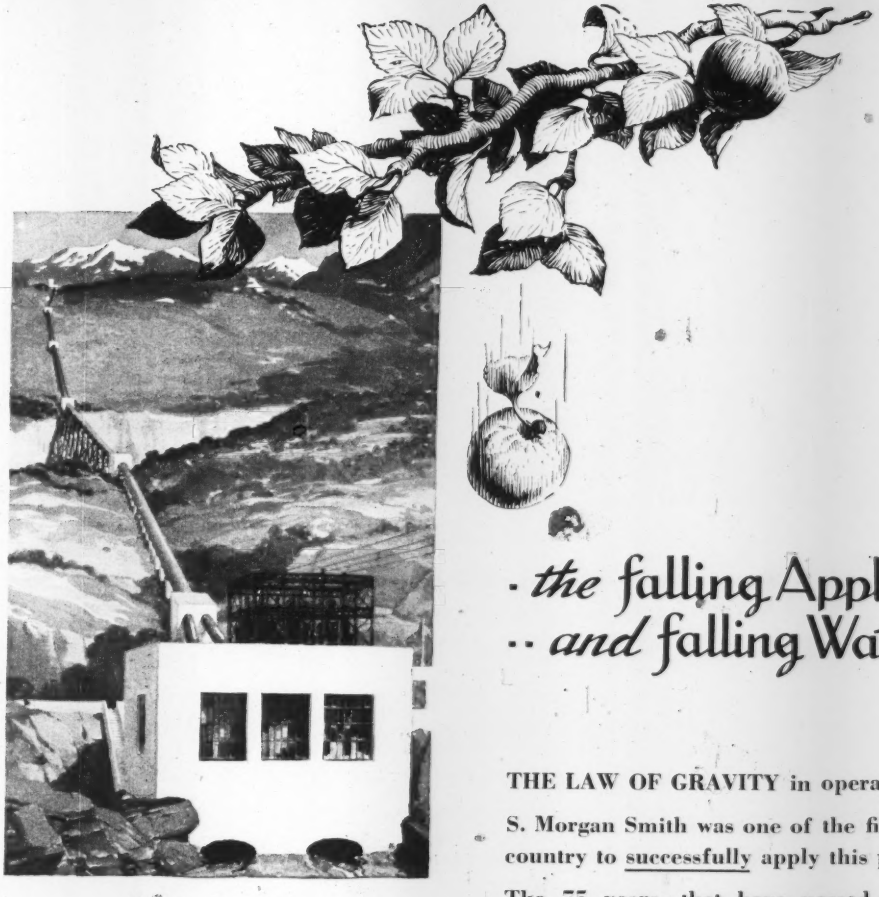
The new pavement, applied to the entire speed loop, is 1¼ in. of asphaltic concrete, using standard Michigan State Highway specifications as a guide. The only deviation from standard was use of 85-100 penetration asphalt in place of the State's 50-60 penetration grade. Asphalt surfaces were given a single coat of emulsified asphalt prime, original concrete surfaces got two prime coats.

Waste sulphite liquor used as road "binder"

More than 350 miles of earth roads in Clackmas County, Oregon, will be treated with waste sulphite liquor this summer. The road binder will be furnished without cost to the county by Publishers Paper Co., from their newsprint manufacturing plant at Oregon City.

The binder is sprayed on unpaved roads to eliminate dust and prevent road deterioration. When the program is in full operation, slightly more than half the mill's daily output of 200,000 gal of waste material will be used in the road improvement program.

While the cost of transportation limits use of the material to areas not too distant from the plant, adjoining counties are planning to use sulphite liquor on at least part of their roads. If experiments prove satisfactory it is planned to tap paper mills at Salem and Newberg, Ore., for additional supplies.



· *the* falling Apple
·· *and* falling Water

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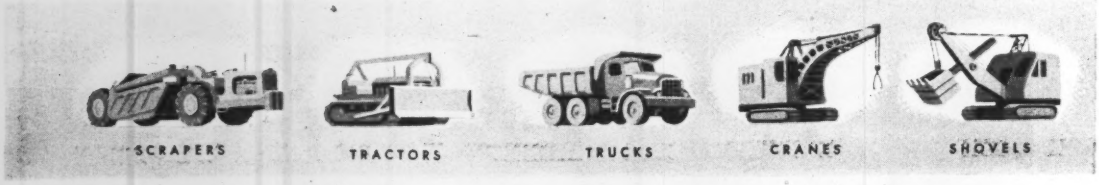
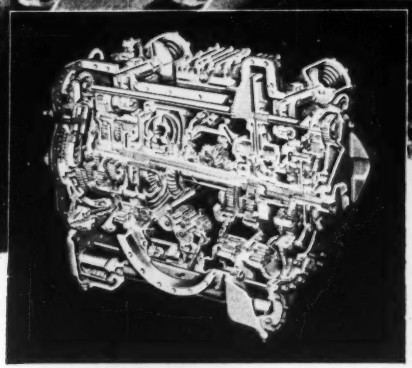
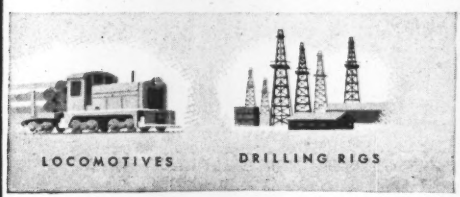




Illustrated is General Patton tank with cutaway view of Model CD-850 Allison Torqmatic Transmission



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TORQMATIC DRIVES

IN SAN FRANCISCO'S blighted Western Addition, a typical acres of residential buildings houses 200 people. The area's downward spiral is marked by overcrowded land and structures, deterioration and discouragement.

San Francisco redevelopment strides forward

San Francisco's Redevelopment Agency, which has been plodding patiently through a maze of preliminaries since 1949—when it was set up under the California Community Redevelopment Act to clear "blighted areas"—has only a couple more corners to round before realizing its first goal. The goal is close enough for the agency to start discussing its wares and asking for some show of interest by private investors.

This was accomplished June 5 when various public agencies and community organizations sponsored an all-day conference for builders, bankers, and civic leaders.

Target of the meeting was pinpointed by Col. Alexander R. Heron, vice president of Crown Zellerbach Corp., and formerly state director of the Reconstruction and Reemployment Commission. He said it's high time for the community to get behind the projects with both financial and moral support.

Closest to realization is the city's Diamond Heights area, which jumped one of its biggest hurdles May 26, when the Board of Supervisors approved the Redevelopment Agency's tentative plan. It will be 1953 before the agency's bulldozers start grading for streets and building sites, and perhaps two years more before the land is up for sale to formulate their plans.

• **For sale**—To bring together the public planners and private investors, City Planner Paul Opperman and Redevelopment Agency Director James E. Lash offered four projects as the "merchandise on the city's shelves":

• **Diamond Heights**—325 acres of land southwest of Twin Peaks will be developed for housing.

• **Western Addition**—26 congested blocks will be razed and rebuilt.

• **McLaren Park**—A small area of undeveloped land will be made available for residential building.

• **South of Market Street**—Primarily a

(*Continued on page 49*)

MODEL of Diamond Heights, showing proposed new contour streets and varied housing types contrasted with existing rectangular street pattern and houses.

PROPOSED REDEVELOPMENT of 26 blocks in the Western Addition, would include building high density apartments, a recreational area and shopping facilities.

NOW! Do your construction fastening up to 100 times faster with REMINGTON STUD DRIVER ... and do it safely!

NEW CARTRIDGE-POWERED MODEL 450

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Test-proved to be the world's finest and speediest fastening system, the Model 450 Remington Stud Driver is made by Remington Arms Company, Inc., *America's oldest and foremost sporting arms manufacturer*. Price for Model 450, complete in rugged steel carrying case—only $119.50. To obtain detailed information on this time and money-saving tool, and for the name of your nearest distributor, fill out and mail the coupon below.

It's fast, easy and safe to operate the Remington Stud Driver

Simply hand-assemble stud and power cartridge, load as a unit in easy-to-open Remington Stud Driver, and close.

Press loaded Stud Driver firmly against surface, depress safety lever and pull trigger. Explosive charge imbeds stud solidly.

Speeds all these jobs . . . and many more!

1. Fastening wood sleepers to concrete or steel.
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5. Anchoring wood plates to concrete slabs.
6. Hanging radiator housings to steel or concrete.

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- Extra heavy-duty engineered for your job, selected from the world's most complete line. 115 basic models, from ½-ton pickups to 70,000 lbs. GVW off-highway models.
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- America's largest exclusive truck service organization.

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Motor Trucks . . . Industrial Power . . . Refrigerators and Freezers

Better Roads mean a better America

INTERNATIONAL TRUCKS

"Standard of the Highway"

light industrial district where rundown flats and apartments crowding narrow alleys must be removed to make space for more commerce and industry.

All these areas, the agency hopes, will eventually be open to private building. Right now, work is expected to progress fastest at Diamond Heights because it is almost vacant and presents only a slight rehousing problem. Preliminary plans have been developed for the Western Addition, while programs for McLaren Park and South of Market are still in infant stages.

• **Agencies**—All California's redevelopment agencies work under the state Community Redevelopment Act. Here's how the program works:

San Francisco's Redevelopment Agency, set up in January, 1949, got an advance from the federal government under the Housing Act of 1949 for its planning operations. Replanning of areas selected for redevelopment is done by the Redevelopment Agency and the City Planning Commission working together, with approval by the Board of Supervisors.

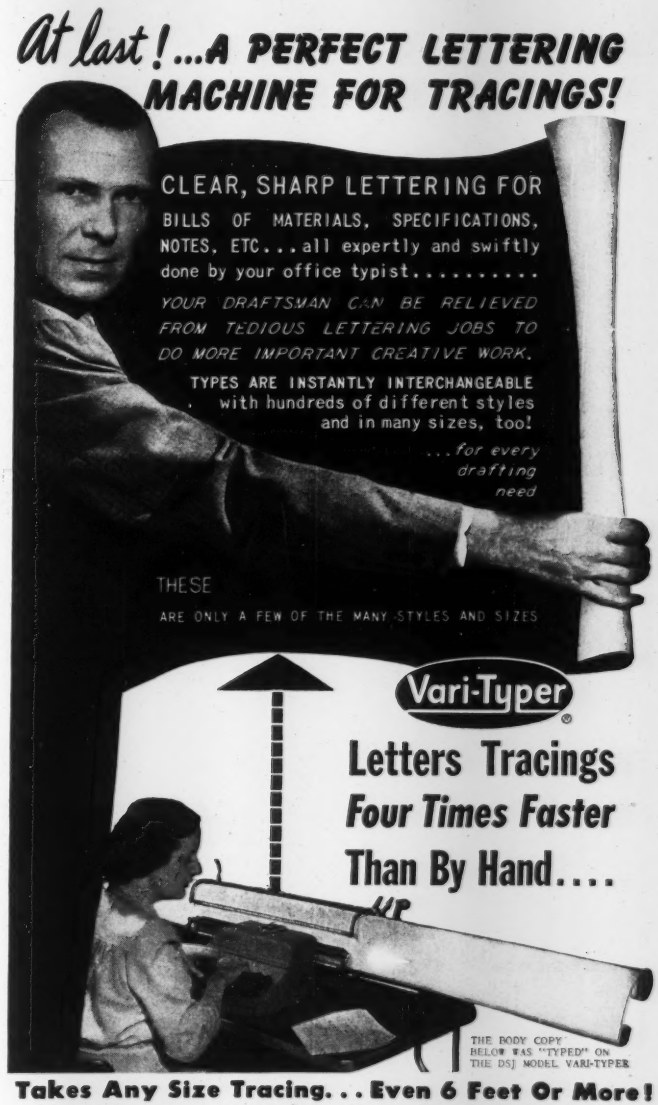
Then the Redevelopment Agency, with money borrowed from the Federal government, buys, clears, and prepares the land for development. The California law removed one of the biggest obstacles to slum clearance by providing for use of eminent domain to buy land from stubborn slum owners.

The City and County of San Francisco, which is responsible for ¼ of the cost of the redevelopment, can pay it by making certain capital improvements such as installation of sewers, building schools, etc.

Speakers at the conference emphasized that rebuilding is not public housing, but is being done by private builders. Land is sold or leased to developers and private individuals who make their own financing plans, and who build and own the houses, apartments and other structures under terms of their agreements with the agency. The agency, which buys the land at a fair market price and improves it, must sell it for a fair price, Lash pointed out, "since the program is not a means of providing a gift of land at public expense."

• **Diamond Heights**—In Diamond Heights a grid street pattern, unrealistic because of the steep grades, has kept the area vacant while the city grew around it. The empty hills are being replanned with new streets to wind around the steep contours.

The agency's tentative plan proposes 2,300 new dwelling units to ac-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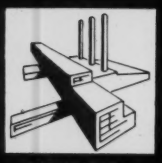

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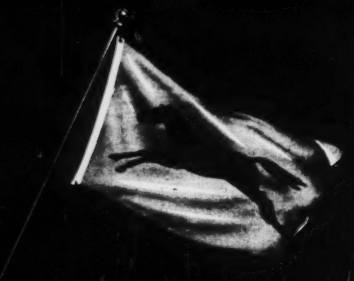

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commodate 7500 people. These could include 600 single family houses, 400 units in flats, duplexes and rental row houses, and 1300 units in large apartment buildings, although the plans would have some flexibility.

Robert Dockson, economist for the Bank of America, in reviewing the real estate market in San Francisco, advised those who might build in the Diamond Heights area to be careful not to build homes or multiple dwelling units much more expensive or less expensive than those that will surround them. He said there is plenty of demand for "middle bracket" or $12,000 to $18,000 houses.

• **Western Addition**—In the Western Addition, unlike Diamond Heights, there will be little demand for the detached house and the multi-family unit will be a better investment.

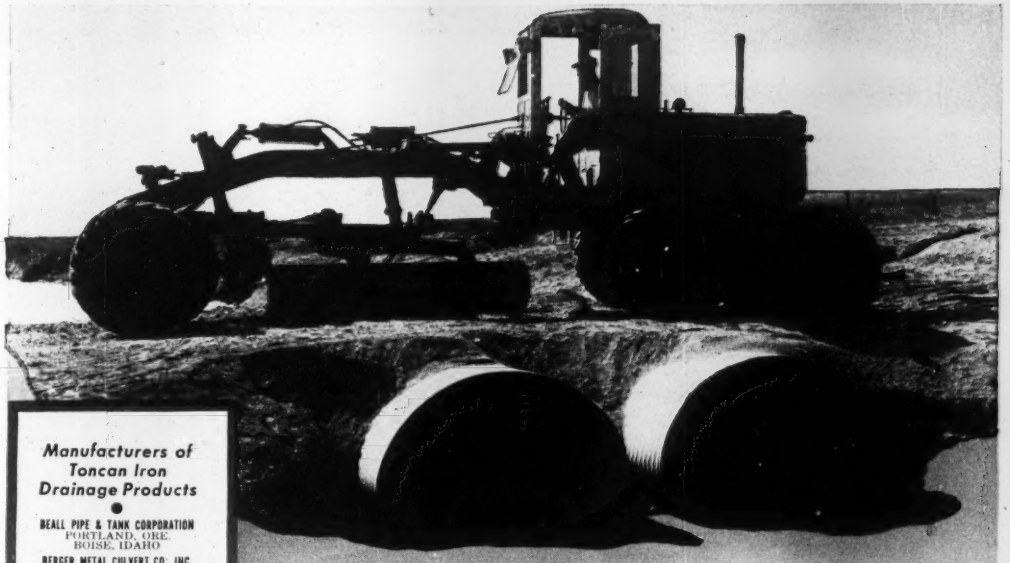
Builders were also urged to remember that San Francisco has peculiar housing problems, particularly because of its geography. In another 8 or 10 years all available vacant land will be gone, so buildings must go "up" rather than "out."

• **Move out and in**—Completion of Diamond Heights is expected to help rehouse, mostly indirectly, the 8000 people who will be displaced by razing the Western Addition. Most of the families will be unable to afford to move to the new Diamond Heights homes, but the total addition to the city's housing units is expected to make it easier for them to find places. The development agency will assist them to re-locate either in private buildings or in public housing units. Architects' plans have been drawn for two low rent public housing projects to accommodate 2,000 persons.

The Western Addition is one of the oldest sections of the city, since it escaped damage in the earthquake and fire of 1906. While surrounding areas were destroyed and rebuilt, the Western Addition homes continued to be used, cut up into smaller and smaller apartments, and finally to approach near-decay.

By clearing the 26 block area, by widening Geary street from 68 ft to 145 ft, and closing some other streets to traffic; by improving and extending schools, playgrounds, and other public facilities; by making available 36 acres for private residential development, five acres for institutions and 10 acres for commerce, the area can be transformed. Construction plans call for high density apartments, walkup apartments and flats.

(*Municipal continued on page 53*)



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Where fill height just isn't available, you still can provide for full flow with Toncan Iron Corrugated Metal Arch-Pipe. The diagram below tells the story.

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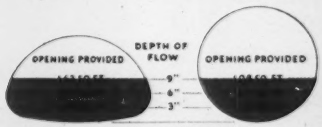

See for yourself why Toncan Iron Arch-Pipe is able to handle a greater volume of water than a full round pipe of equivalent size and cost. At the depths indicated, the greater cross-section area of Arch-Pipe obviously can carry more water.

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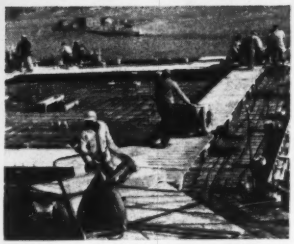

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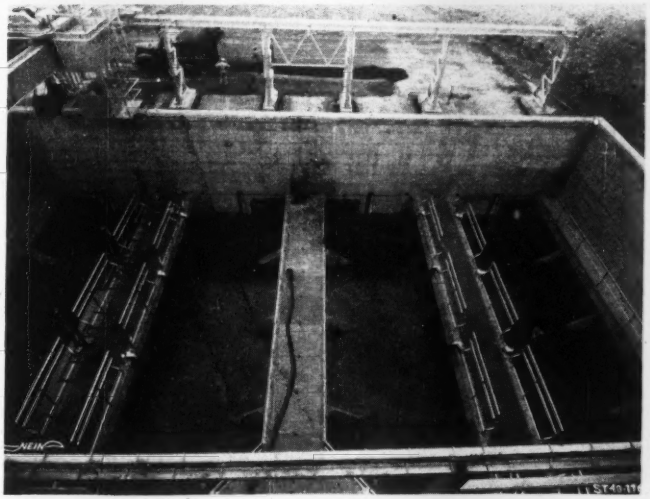

Despite these new air diffusion grit collectors . . .

modified settling tanks and other improvements . . .

Columbus treatment plant faces severe overloading

When a sewage plant pumps 78 mgd through its treatment tanks and its capacity is 60 mgd a breakdown is not a remote possibility. This briefly is the situation in which James Blodgett, superintendent of the Columbus, Ohio, sewage treatment plant finds himself.

Adding to his troubles are the lawsuits filed by farmers of the Scioto River Valley. The farmers are downstream residents of the plant's local receiving stream.

The farmers enter the suits claiming that the river is polluting their lands and menacing their livestock. Most of the cases are settled outside of court, but so far the city has paid out $45,000 in settlements since 1945.

Blodgett; Elmer A. Keller, director

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of Public Service and Orris Bonney, chief engineer, Division of Sewerage and Drainage, are hopeful that the Columbus city council will give them money to increase the plant capacity soon.

• **How the situation arose**—In 1945, a bond issue of $2 million was passed to augment the existing plant facilities and boost its capacity from a nominal 45 mgd to a planned capacity of 80 mgd. The first contracts were let in 1947 and the engineer's estimate (based on 1944 prices) was inadequate due to the increase in construction costs.

It then became necessary to choose projects which would have the maximum effect on improving plant capacity.

• **Spot corrections**—One of the bad bottlenecks in the plant was the grit chamber installation, so a new grit collector unit costing $500,000 was constructed first and completed in 1949.

Then followed modification of the air diffuser system in the aerators, in order to improve the efficiency of these units and permit the use of installed blower capacity. The original fixed plate system was replaced by swing type air diffusers costing $325,000, also completed in 1949.

Modification of the primary settling tanks to increase their efficiency was the next step, the single outlet weirs being changed to a multiple weir system to cut overflow rates; the concrete tank covers were removed for better accessibility, and the old grit channels adjacent to these tanks were converted into grease separation channels by the installation of some of the old plates and holders taken from aerators. This work cost $200,000 and was completed in 1950.

Shortage of power was another sore spot, since the Municipal Electric Plant was unable to carry the load at all times. An extension was built on the existing power generating station at the plant and a new dual-fuel type engine of 1,500 hp plus a 1,000 kw generator and the necessary switchgear were installed in 1950 at a cost of $325,000.

• **Largest contract**—Then came the largest contract to augment the sludge digestion capacity which was badly overloaded.

This contract consisted of six 85 ft dia by 30 ft water depth primary digesters with floating covers; two 85-ft dia by 30 ft depth secondary digesters,

(Continued on page 56)

California contractor reports:

Engines exceptionally clean ...minimum of wear with T5X lubrication

One of L. F. Freeborn Company's Caterpillars being serviced with Union Oil products

The L. F. Freeborn Company operates heavy grading equipment in the Bakersfield, Calif., area. Mr. L. F. Freeborn recently wrote: "For the past six years we have been using T5X motor oil in our equipment, which includes two Caterpillar Diesels, one GMC Diesel, two International Diesel UD 18A's, one International UD 24, one HXE Hercules natural gas engine. These power units have been operating under high temperatures and extremely dusty conditions. Upon inspection of these engines, we have found them to be exceptionally clean, with a minimum of wear."

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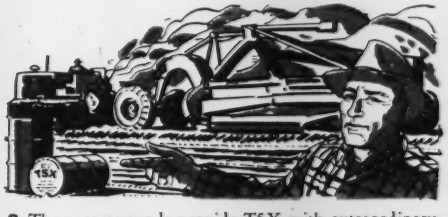
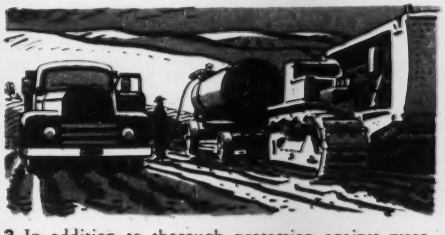


2. These compounds provide T5X with extraordinary resistance to oxidation, corrosion and acid action—major causes of engine wear.



3. In addition to thorough protection against wear, T5X provides *thorough cleansing action.* The detergency of this *purple* heavy-duty oil keeps pistons, ring grooves and ring slots clean and free from sludge.

Write your nearest Union Oil Company office for further information about T5X.

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with gas holder type covers, together with a control house and necessary appurtenant equipment. The cost of this work was $1.25 million. This completely used up the funds made available by the bond issue. It also used up some $500,000 in surplus sewer revenue funds. All this work was completed in 1951.

• **Future plans**—Drawings have been prepared for a plant liquir disposal unit consisting of preparation tanks excess activated sludge concentrators and superantant treatment tanks; also lengthening of the present acrators to increase their volume 25%, plus provisions for step aeration; a new 100 ton sludge incinerator and building, and a grease separation unit. An additional 1000 kw power generating unit is also contemplated.

• **The problem**—The improvements have stepped up the nominal plant capacity from 45 to 60 mgd. However, the average dry weather flow is 70 to 75 mgd and increasing at the rate of 2 mgd per year.

When peak flows reach a rate of 85 to 90 mgd it will be just too much for the plant to handle. A standard activated slude plant will operate properly when a BOD removal is between 85 and 90% but whenever the BOD removal falls below 85% it is close to losing the activated slude through septicity and that means trouble.

During the period from June through October the local receiving stream (Scioto River) will not support a BOD of more than 20 ppm. This has resulted in pollution suits from the downstream farmers.

A breakdown in any major unit of the plant will throw severe pollution loads into the river.

• **Solution**—Blodgett, Keller and Bonney have tried to arouse the authorities to the problem. They say the money can be easily raised if the city would raise the sewer service charge in the same proportion that the water rates were raised to finance a new dam.

The city council has passed a resolution asking the local Metropolitan Committee (composed of non-political businessmen) to study the problem and advise how to raise some $3.6 million for finishing the expansion of the present plant to 80 mgd. Also under consideration is raising another $5 million for a new plant (smaller than the present one).

In the meantime James H. Blodgett says he hopes the money is forthcoming soon.

(*Municipal continued on page 59*)

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(2-CYCLE)

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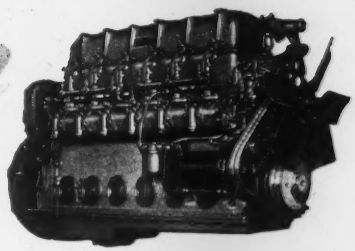
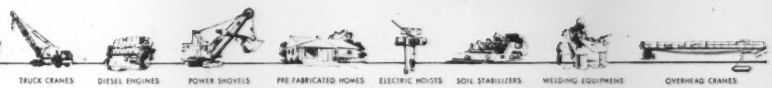


the P&H *Line*



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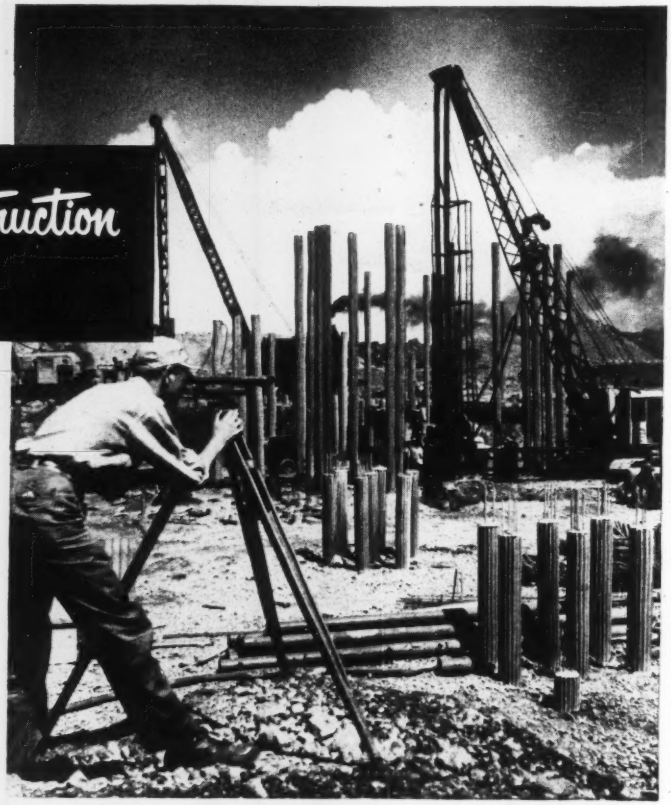
...with MONOTUBE cold-rolled steel piles!



THE advantages afforded by Monotube piles in this major Canadian industrial project are well worth considering . . .

Although driving conditions were extremely tough—10 to 15 feet of heavy slag fill—over 3,000 Monotubes up to 80 feet long were driven with only light, mobile equipment!

Secondly, the job involves high loading . . . safely accomplished using fluted, cold-rolled Monotubes with 12″ butts and standard 8″ tips.

Finally, Monotubes as usual afforded the extra advantage of easy, on-the-job cutoff and extendibility. Cutoffs were readily re-used as extensions.

Monotubes come in types and sizes for sound, economical support in any kind of soil under *all* kinds of structures. For details write to The Union Metal Manufacturing Co., Canton 5, O.

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Monotube Foundation Piles

Second of 7 destructors started in New York City

The second in a series of seven new incinerators being built by New York City to eliminate garbage landfills was dedicated last month. The $4.5 million plant—called the Gansevoort Destructor Plant—is on the Hudson River just below 14th Street.

Merritt-Chapman & Scott Corp. of N. Y. are building it for the Sanitation Department under the direction of the Department of Public Works.

The plant is designed to serve an area of 6.8 sq mi with a population of 548,000. It will be equipped to handle 1,000 tons of refuse and garbage per day.

The refuse will be delivered in closed compactor-type trucks and will be moved from the receiving pit by crane-operated one-ton capacity buckets to hoppers for automatic feeding to the plants four furnaces. The ash will be quenched in water-filled hoppers and removed by scraper and belt conveyors directly to barges moored at the loading stations adjoining the plant.

The barges will then carry the ash for disposal at controlled landfills.

The combustion gases, after passing through the forced draft air preheaters, which will help dry the refuse, will pass through expansion chambers for removal of fly ash.

The gases will then discharge through the two 200-ft chimneys.

The plant is expected to be in use next March 1.

Twin tunnels planned to cross Baltimore harbor

The inner harbor crossing plan in Baltimore, Md., approved last week by the planning commission and Mayor Thomas D'Alesandro, calls for mile-long twin tunnels carrying roadways a maximum of 79 ft below mean water.

The channel off Fort McHenry is 39 ft deep and the Fort McHenry-to-Canton tunnels will thus be almost 40 ft below the harbor bottom.

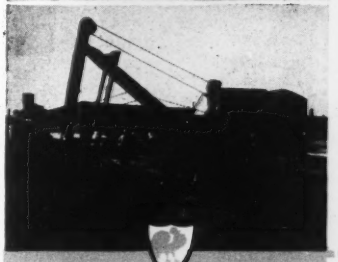
The state, which has approved the tunnel site, is to construct the twin tubes and the city will build the approaches. The Mayor is forwarding the harbor crossing plans to the state which will hire engineers to prepare working drawings.

The tunnel will pass under Fort McHenry and emerge in Canton on present Cities Service property. Each tunnel will have a dia (outside measure) of 31 ft and each will have two 10-ft six-in. lanes.

1 Bantam® does all 3 jobs!

for less than $6500.00

(Less truck and mounting charge, F. O. B. Waverly, Ia.) Price includes complete hoe unit with boom, stick and bucket, plus crane adaptor and backfill blade. Price subject to change.



1 Trenching!

Low-cost Bantam Back Hoe mounts on new or used truck . . . drives anywhere over paved roads, black top or off-highway in a hurry . . . maneuvers in close quarters and soft spots where bigger machines can't go . . . digs up to 100′ of 5′ trench per hr. with 20″, 25″ or 30″ bucket . . . works to 14′ depth.

2 Hoisting!

Simple crane adaptor converts Bantam hoe to 2½-ton crane (less outriggers or counterweights) in 15 minutes on the job. Uses same boom and same one-man operation for lowering pipe, valves, etc. . . . saves bringing in "high-lifts" or side-boom tractors for unloading trucks, placing tanks, etc.

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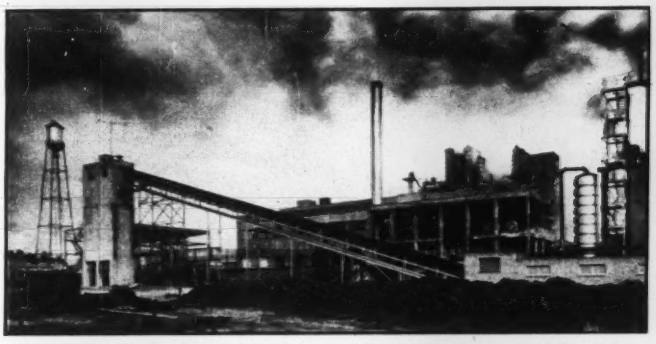
GENERAL VIEW of the $15-million Betania Alkali Plant 30 miles north of Bogota, Colombia—E. M. Payne photos.



CONCRETE LIME STORAGE—This view of the bin shows the belt conveyor which brings the lime to the bin from the vertical kilns.

U. S. firm designs, engineers, builds $15-million alkali plant in Colombia

Full-scale operations have begun at the Betania Alkali Plant, the first major alkali production unit ever built in South America. Located 30 miles north of Bogota, Colombia, the $15-million plant was designed, engineered and constructed by The H. K. Ferguson Co. for the Institute de Fomento Industrial, the Colombian governmental agency in charge of industrialization, and the National Bank of Colombia, which maintains control of salt properties.

The plant has an annual production capacity of 40,150 tons of soda ash, from which are produced 20,075 tons of dense ash, 10,037 tons of chemical caustic, 4,818 tons of bicarbonate of soda, and 3,960 tons of light soda ash.

These products will be used by the textile, soap, glass, rubber, tanning and petroleum refining industries in the Bogota area. A refined salt unit with a production capacity of 80,300 tons annually has been designed but not yet constructed.

• **Minimum cost, maximum production**—The Betania facilities will play a key role in the industrial development of mineral-rich Colombia. Until they were available, the country's basic industries were hampered by the need for importing alkali chemicals. This kept costs high, since the chemicals had to be transported by river boat and narrow gage railway to the mountainous interior, where much of the population and industry are concentrated. The plant site was chosen after an extensive survey to find a location which would contribute to minimum cost and maximum production.

• **Quake resistant**—Because the plant is in a severe earthquake zone, all structures were designed to withstand earthquakes of maximum intensity.

The plant consists of eight major units, including a power plant which supplies the necessary electricity and steam. In general, open-type construc-

(Continued on page 64)

Just a hammer and a knife . . . and you're in business. Nail flexible, polyvinyl Labyrinth Waterstop to the wall—*inside* your form—and forget about water seepage between concrete pours. Here's a real time, trouble and money saver.

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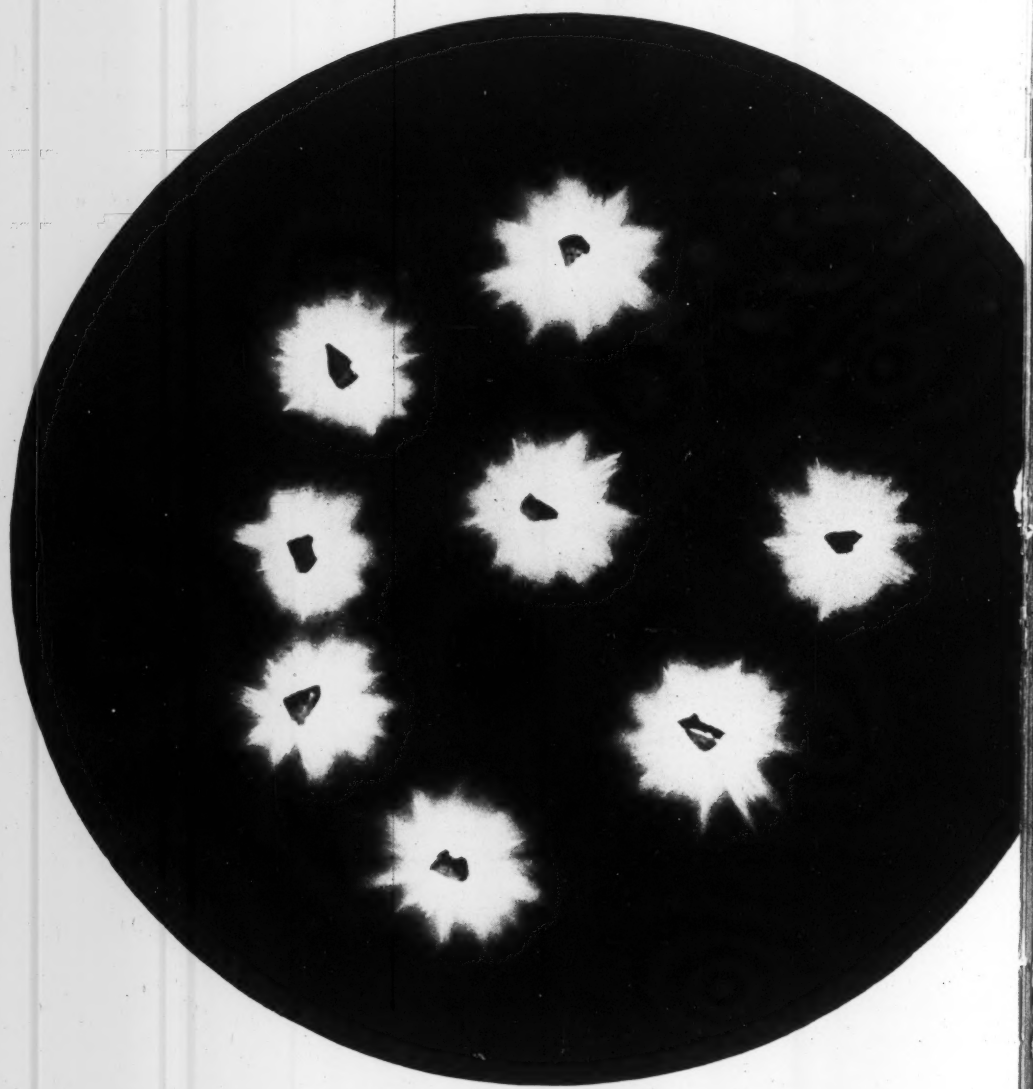


This drawing represents a greatly magnified drop of Delvac Oil taken from the crankcase of a test engine containing a radio-active piston ring. The white "stars" are radio-active metal particles worn off the ring during a test run.

With Delvac Oil, there are comparatively few particles. With ordinary heavy-duty motor oils, the particles are many times more numerous. This proves that today's Delvac Oils with super-detergent formula give vastly greater protection against low-temperature corrosive wear.

TELL A VITAL STORY

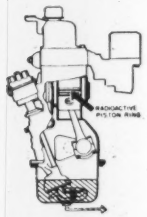
New Radio-Active Tracer Tests Prove Delvac Oils' New Super-Detergent Formula Cuts Engine Wear—Lowers Oil Consumption

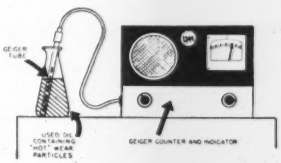
FROM TESTS with radio-active tracers taken from the atomic pile at Oak Ridge comes the proof:

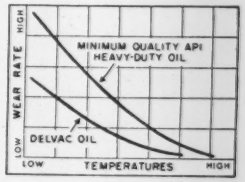
Delvac Oils with new super-detergent formula sharply reduce wear during low-temperature operation *when most wear occurs* . . . during starts and warm-ups and stop-go operation. Less engine wear means longer engine life, fewer overhauls — lower fuel and oil consumption, too!

For additional protection, Delvac Oils also provide other outstanding performance qualities. They resist oxidation and foaming, guard against corrosion, minimize formation of varnish, lacquer, sludge. They help your engines develop full power — help keep maintenance costs at rock bottom!

Call your Socony-Vacuum representative today for these improved, super-detergent Delvac Oils. They are recommended or approved by 125 of the country's leading engine and equipment builders.







Here's how the sensational wear-fighting properties of today's super-detergent Delvac Oils are proved:

Radio-active piston rings are installed in test engines. "Hot" metal particles, worn from the rings, are picked up by the motor oil. Radio-activity of this oil, measured by Geiger counter, indicates *with amazing accuracy* amount of wear which occurs.

° ° °

Chart above graphically shows result — an almost unbelievable reduction in wear!

DELVAC OILS

Correct Lubrication for Contractors

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ASPHALT: For compacting asphalt in such operations as highway widening and patching, paving walks, drives, railway platforms and crossings, there's nothing that equals the convenience and time-saving features of the Jackson Vibratory Compactor. And the quality of work it does is unsurpassed by far more costly and cumbersome equipment. Small as it is, the Jackson delivers up to 4500 1¾ ton blows per minute. It propels itself and will compact 900 to 1200 sq. ft. per hour close to maximum density of the asphaltic mix used. And it is easy to move from place to place by means of a quick pick-up trailer unit on which the power plant, from which it is operated, is mounted.

GRANULAR SOILS: The same machine as above, with a change of base, is ideal for compacting granular soils for concrete floor-sub-base, in trenches, close to footings and abutments and many other places. It quickly reaches, in two passes, maximum density of granular soils. See it at your Jackson Distributor, who has it both for sale and for rent, or write for complete details.

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LUDINGTON, MICHIGAN

tion was used for the process buildings because the climate is temperate and operations are not affected by rain. However, should it become necessary or desirable, brick walls can be installed with little time or labor.

• **U. S. design, local labor**—The plant was constructed by Colombia labor working under supervision of Ferguson personnel. The design phase of the program was carried out in Ferguson's New York office. Specialized process equipment was purchased in the United States, with procurement handled in New York. Operations are being directed by Arthur T. Bennett of The H. K. Ferguson Co.

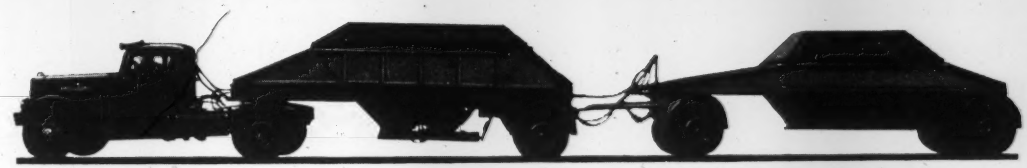
International briefs

• **Reinforced concrete bridge**—Under construction in the state of Rio Grande do Sul, Brazil, is what is claimed to be the world's third longest reinforced concrete arch bridge. The arch is 610 ft wide between foundations anchored in solid rock. The bridge itself will be 856 ft long and have a deck 29½ ft wide of which 23½ ft will be roadway. Maximum rise of the arch will be 92 ft. Contractor is Christiani-Nielsen Engiheiros Constructores S.A. The cost is $750,000.

• **Guatemalan public works**—Morrison and Knudson, Inc., Boise, Idaho, has done initial survey work for a $3-million dock construction program for the government of Guatemala. The new dock will be at the Caribbean port of Puerto Barrios which is a seaport for both Guatemala and El Salvador. The construction of the dock and of a new highway between Puerto Barrios and the interior of the country is one of the primary projects of the government.

• **Rome-Brindisi motor road**—The Italian ministry of public works is considering the construction of a new speedway to connect Rome with Brindisi (the ancient port of Brundisium near the "heel" of Italy. It would be the longest highway of its type in the country. It will be about 279 miles long and will cost in the neighborhood of $105 million.

• **Mexican rural road program**—The National Rural Roads Committee is now building more than 60 feeder roads throughout Mexico. Funds are contributed by the federal government, automobile assembly plants, rubber tire manufacturing corporations, and other private contributors. (*International continued on page 66*)



AUTOCARS...precision built for moving mountains of material!

Two hauling jobs in Hawaii demonstrate Autocar's ability to surmount tough off-highway conditions. Like every one that comes off the assembly line, these Autocars are custom built for their roads and loads. The result is improved materials-handling at low cost.

Autocar Trucks

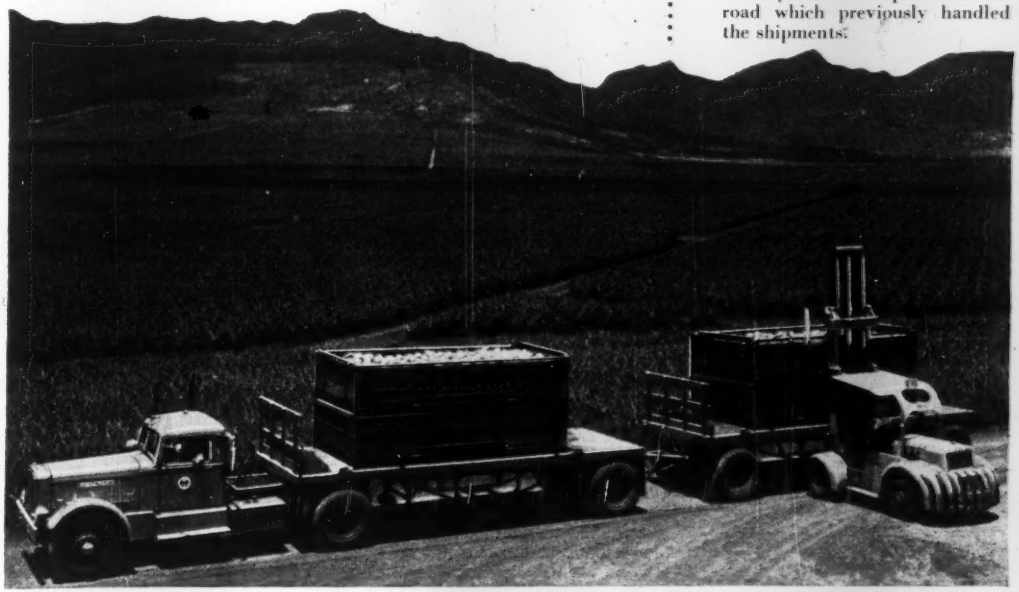
The Autocar Company, Ardmore, Pa.

Established 1897

Factory Branches and Distributors from Coast to Coast

(*top*) One of three Autocar-Diesels owned by B&C Trucking Co., Honolulu. They run steadily, 24 hours a day, 6 days a week, hauling sand across Oahu for a concrete block manufacturer. Each Autocar travels 2,700 miles a week. In the owner's words: "The three do the work of 27 10-ton dump trucks."

(*bottom*) a mighty Autocar-Diesel owned by Oahu Transport Co., Honolulu, at work in the pineapple fields. This modern materials-handling operation consists of a fork lift and the Autocar tractor with semitrailer-trailer which delivers pineapples direct to canneries and docks in Honolulu. This system has replaced a railroad which previously handled the shipments.



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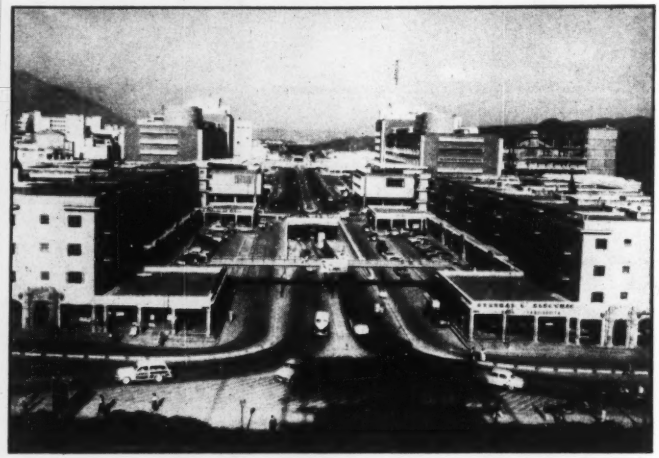

SILENCIO—This "Times Square" of Caracas is the focal point of all buses, travel agencies, steamship offices and airplane companies. In the foreground is the north-south underpass.

Caracas builds a "Rockefeller Center"

Four-hundred-year-old Caracas, the mountain capital of Venezuela, a land rich in oil and minerals, is undergoing a transformation. More than 400 buildings in the heart of the city have been torn down to make way for a "Rockefeller Center," building and traffic project.

Known as Avenida Bolivar, in honor of Simon Bolivar, South America's "George Washington," it will be a model for the later transformation of the entire city.

Already one-fourth completed, the $300-million project includes an 8-lane superhighway, one mile long. It is being flanked by modern business and commercial structures. Two 28-story buildings, now under construction, will accommodate 2,000 office workers each. Two others of eight stories each, just completed, provide commercial quarters for a total of 3,000. Both have second-floor terrace cafeterias. Sheltered walks for pedestrians along their length are dotted with shops. Each of the already constructed buildings occupies 300,000 sq ft of ground area. The project calls for 24 buildings, twelve on each side of the Avenida.

The central section of the Avenida has four traffic levels, including an underground parking space for 1,600 cars and a terminal for 600 buses. Two underground thoroughfares criss-cross the central part of the Avenida, which has wide approaches and exits.

• **Planned for years**—The need for such an urbanization project has been felt in Caracas for about 15 years. By 1937 Venezuela's oil production has increased to 500,000 bbl daily. Motor cars had begun to crowd its narrow streets, the population had grown to around 200,000, and the old "City of Red Roofs," as Caracas was then called because of the red tiles covering its houses, already was something of an anachronism.

In an effort to provide greater living and transportation space, the government called in architects and city planners and the idea of Avenida Bolivar was born.

SOUTH BUILDING—Streamlined louvers deflect the sun's rays and take advantage of cool winds.—Hamilton Wright photos

HOW J & L JUNIOR BEAMS SAVE TIME, SOLVE DESIGN PROBLEM AT LOW COST IN

ST. CHARLES SCHOOL

YOUNGSTOWN, OHIO

Architect P. Arthur D'Orazio and George J. Murphy Company, contractors-engineers, of Youngstown, Ohio, have employed lightweight J&L Junior Beams as cantilevered roof purlins at the Boardman Center's ultra-modern St. Charles School near Youngstown. J. A. McMahon, Ltd., Niles, Ohio, fabricated the 85 tons of structural steel and 35 tons of Junior Beam joists going into the framework.

Notched over lintel beams and cantilevered four feet beyond the outside walls, J&L Junior Beams support not only the roof but also an attractive permanent sun shield over classroom window walls.

Because of their versatility and adaptability, J&L Junior Beams go far towards meeting the demands of today's builders. They cost less to buy and less to erect. Lightweight, 12″ Junior Beams, 11.8 lbs. per foot, 30 ft. long, may be easily raised, placed and bolted directly into position by three men with the aid of only a hand-operated winch.

The lightweight and consequent ease with which Junior Beams can be handled led to fast, economical construction that helped hold building costs to a minimum. ALL STRUCTURAL STEEL INCLUDING THE JUNIOR BEAM ROOF PURLINS WAS ERECTED BY 6 MEN IN 2 DAYS.

ARCHITECTS — CONTRACTORS

If you're engaged in the design, or construction of light occupancy buildings, you'll be interested in these features offered by J&L Junior Beams. EASY TO INSTALL, RIGID, VIBRATION RESISTANT, SHRINK PROOF, LOWEST DEFLECTION FACTOR OF ANY STRUCTURAL SECTION OF EQUIVALENT WEIGHT.

Why not write today for our new booklet: "Skyscraper Construction for Every Building"? It shows how Junior Beams are used as floor joists, and roof purlins with loading and spacing tables for various spans.

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MANUFACTURERS OF ASPHALT AND ASPHALTIC PRODUCTS

Wood researchers explore new construction methods

Latest developments in wood construction were aired June 23-25 at the sixth annual convention of the Forest Products Research Society in Milwaukee, Wis. Among the more significant reports were these:

• **Roof construction**—G. M. Rapp of the John B. Pierce Foundation, Raritan, N. J., described lightweight, prestressed wood arches as a new type of roof construction. Slender, elastic members of lumber and plywood, when sprung and held in a flat arch by horizontal tie members which prestress these members in bending, have been shown to possess adequate strength and stiffness for short spans.

"The result as finally conceived is the elastic arch, resembling closely the conventional tied arch but differing radically from it in that the curved member is highly stressed in bending in its free or unloaded conditions," Mr. Rapp said. "The necessary theory for stress analysis and strength design has been derived and applied to the development; and tests have been made of a limited number of experimental assemblies, and field applications of several prototype structures in wood."

The conclusions from these tests indicate that a novel and useful type of roof has been developed. Such structures have simplicity and economy approaching or equalling that of simple beams and rafters, and make more efficient use of materials than wood trusses.

• **Frame wall costs**—The Small Homes Council of the University of Illinois has, over a period of approximately six years, built a number of frame houses for research or demonstration purposes. J. T. Lendrum, director of the council, made a report covering a detailed time-study taken during the costruction of these houses on the methods by which the houses were assembled.

The lowest number of man-hours was required when all structural members were precut from framing schedules, preassembled in a horizontal position and tipped into place. The use of roof trusses made it possible to follow this system for all of the major structural parts of the house.

House area, shape and the span of the trusses cause variations in the cost per foot of the roof construction, the lowest costs accompanying the larger spans and simple rectangular houses.

From these facts, Mr. Lendrum concludes you can specify the type house, and construction methods which would cost least.

"In order to reduce the wall-to-floor ratio such a house should be nearly square, with the roof truss span in the order of 30 ft. The dimensions should be modular, with the wall framing carefully planned with no unnecessary members. Windows should be designed so as to eliminate the necessity for headers or lintels—which means the glass should extend to the ceiling. The width of the window unit will be limited by the structural strength of the top wall plate."

• **Other reports**—Design and development of non-loadbearing partitions was discussed by William H. Kapple, research assistant professor, Small Homes Council, University of Illinois.

He reported the results of load tests on 21 different kinds of studless walls designed for back walls of closets, and comparable data on four different stud walls.

Five of the studless walls were hollow-core, 14 were double laminates, and two were plywood. The results showed that the double-laminated wall panels were stronger and stiffer than the non-loadbearing stud walls finished with ⅜-in. gypsum. These laminated panels cost 21.3% to 44.4% less and weigh 31% to 48% less than the stud wall.

Too frequent or too generous repainting of exterior wood surfaces leads to alteration of the normal deterioration of paints, according to a report by F. L. Browne, chemist and D. F. Laughnan, technologist for the Forest Products Laboratory.

The safest program of maintenance calls for no more than two coats every six years.

Chosen president-elect of the society was Robert D. Pauley, manager of the Special Products division of the Weyerhauser Timber Co. Kenneth G. Chesley, director of research for the Grossett Lumber Co., Grossett, Ark., took office as president. Lester Carr, general manager of the L. J. Carr Co., Sacramento, Calif., was chosen vice-president.

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√ Holds More Weight
√ Less Maintenance

You will get important savings on every shoring job when you use the new one-man, all-steel Safway Shore:

YOU SAVE TIME—because *Safway Shores* are erected so easily. Just extend upper tube to approximate adjustment—fasten with pin—rotate sleeve nut to exact adjustment.

YOU SAVE LABOR—because one man can carry, locate and adjust *Safway Shores*. Handle is at chest level. No nailing or bracing in most cases. Shores will stand alone.

YOU SAVE MONEY—because fewer *Safway Shores* are needed to support the same loads (capacities to 9,900 lbs.). Less maintenance required—sleeve protects threads.

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- **Only 3 Sizes**—Cover a 6-15½-ft. range. Each size adjustable through 5 ft.
- **3 Head Types**—8 in. U-head seats 4 in. or lapped 2 in. lumber. 14-in. U-head for beam formwork—square flat plates for reshoring.
- **High-Carbon Steel Tubing**—No wood members of uncertain condition and load capacity—no splintering or fire hazard.
- **Handle High Work**—Shores easily mounted on legs of standard Safway frame-type scaffold.
- **Bracing Brackets**—For heights over 12 ft.

Write for this Free Bulletin

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SAFWAY STEEL PRODUCTS, Inc.
6225 West State St.
MILWAUKEE 13, WISCONSIN

Tubular Steel Scaffolding and Equipment

Dig a Ditch

Use Buckeye

...to Keep Digging

WOOD

TRIES

for All these Jobs!

SEWER LINES • TELEPHONE LINES • FOUNDATIONS
FARM DRAINAGE • WATER LINES • PARK DRAINAGE
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IRRIGATION DITCHES AND GENERAL DITCHING

. . . and the *basic* excavation on each of the jobs is a good, clean ditch — a BUCKEYE can do it at lower cost!

Ditchers

. . . For over 60 years BUCKEYE has pioneered in developing and building every known type of ditcher. Today's models include wheel-type machines ranging in cutting width from 10" up to 51" with specialized models such as the '302' for farm drainage work and the '51' for big pipe line jobs . . . Ladder-type machines range from 8" to 48" in cutting width with boom lengths up to 16 ft. . . . This wide variety of BUCKEYE models gives you "the most ditch for the least cost" no matter what your excavation job may be!

Costs at a Minimum!

. . . A BUCKEYE effectively reduces expensive hand labor —operates at an exceptionally low hourly cost and requires a minimum of maintenance—cuts digging costs to a minimum!

GAR WOOD INDUSTRIES, INC.

FINDLAY DIVISION • EXECUTIVE OFFICES • WAYNE, MICHIGAN

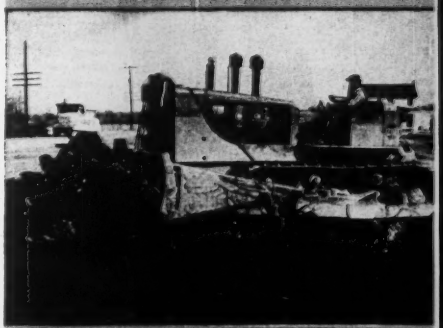
Construction Equipment: Excavators, Scrapers, Dozers, Ditchers, Spreaders, Finegraders, Truck-mounted Road Graders. Truck Equipment: Dump Truck Bodies & Hoists, Winches & Cranes, Refuse Collection Bodies, Elevating End Gates.

No. 524

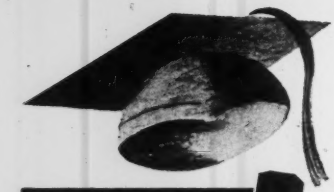
OTHER GarWood EQUIPMENT

GAR WOOD SCRAPERS—A complete line of tractor drawn scrapers for accurate, high-speed earthmoving.

GAR WOOD EXCAVATORS—New 3/4 yd. crane-shovels, crawler and truck-mounted; all operating conversions.



GAR WOOD DOZERS—Tip Dozers and Dozecasters in 12 new models. Your choice of cable or hydraulic controls.



CASTELL

the Drawing Pencil with the *Master Degrees*

- SMOOTHER . . . no hard spots.
- GRAPHITE-SATURATED . . . better adhesion.
- MORE OPAQUE . . . better blue and white prints.
- STRONGER . . . less point breakage.
- NON-BLEEDING . . . gives sharp, clean prints even after hundreds of trips through the reproduction machines.
- ECONOMICAL . . . 25% to 33⅓% more wear.

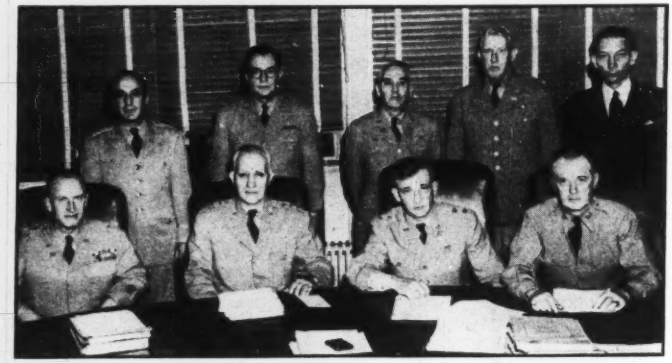
CASTELL 9400 push button LOCKTITE Refill holders . . . black or colored.

CASTELL 9030 Imported Leads with the "Master Degrees"

Order from your Dealer

A.W. FABER-CASTELL

PENCIL COMPANY, INC., NEWARK, N. J.



BOARD OF ENGINEERS FOR RIVERS AND HARBORS—(Left to right, seated) Brig. Gen. Don G. Shingler; Lieut. Gen. Lewis A. Pick; Maj. Gen. George Nold; Col. Wendell P. Trower. (L to r, standing) Col. Emerson C. Itschner; Col. Chester K. Harding; Col. H. R. Cole; Col. Paschal Strong and Mr. Ben. Walker, executive sec'y. (US Army photo)

Board passes half-century of service

Half a century of service to the nation was observed by Board of Engineers for Rivers and Harbors at its monthly session in Washington, D. C., two weeks ago.

This senior engineer board screens proposed river and harbor and flood control projects investigated by the Corps of Engineers. The procedure was set up by the River and Harbor Act of June 13, 1902.

The review process is an evaluation of federal public works under jurisdiction of the Corps of Engineers. From 1930 to 1950, the board reviewed 3,177 reports; more than half were reported unfavorably. The high percentage of unfavorable recommendations reflects the thoroughness of the investigations.

• **Before the board**—From 1824, when civil works responsibilities were assigned to the Corps of Engineers, until 1902, reports called for by Congress were prepared by District and Division Engineers and forwarded to the Chief of Engineers.

Establishment of the board resulted from Congress' desire that uniform policies and methods be applied to reports. For fifty years, the board has served as a part of the thorough engineering analyses characteristic of the Corps of Engineers.

• **Members**—Members of the board are senior officers of the Corps of Engineers and are selected for the assignment because of their knowledge and experience in river and harbor and flood control work. The membership consists of a chairman, who is generally the Deputy Chief of Engineers; five officers, who are usually Division Engineers assigned to board membership in addition to their other duties; and a resident member, permanently stationed with the board.

• **Meetings**—Board meetings are held frequently to permit submission of reports to Congress without delay. Usually meetings are held every four weeks, each meeting lasting two or three days. Public hearings are held at these meetings, if requested. The important intermediary function of the Board of Engineers for Rivers and Harbors has become widely known among people concerned with the planned control and utilization of the nation's water resources. Delegations appear at meetings to support or oppose projects.

• **How studies are made**—The board's technical staff, under direction of the resident member, makes a study of the engineering and economic features of proposed plans. It analyzes the relation of estimated costs and charges to estimated benefits and savings.

After the board's recommendations are received, a report from the Chief of Engineers is submitted to the states concerned, other federal agencies in-

(*Continued on page 75*)

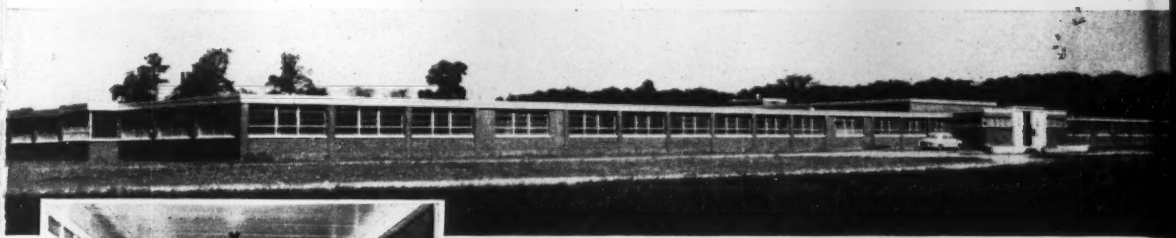
Modern Thinking about Modern Materials

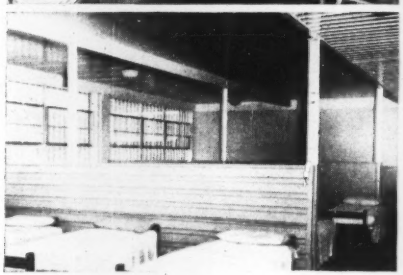
BUILDS HOSPITALS AT 65 TO 75% OF REGIONAL COST

The one-floor quadrangle, around two football-field sized patios, is what Gregson & Ellis, of Atlanta, designed to replace the three-story edifice on the right for psychiatric patients. It is the thoroughly modern, well equipped, new Milledgeville State Hospital costing only $4.95 per sq. ft.

The 1,000-bed building shown below is typical of many institutional structures designed by Gregson & Ellis at a cost ⅔ to ¾ of regional costs, with access to the same labor and building conditions.

Gregson & Ellis designed, to full advantage, the economies inherent in all Robertson materials. They made the most of fast, lightweight dry construction, and knew how to achieve the functional beauty of undisguised materials. The contractor for the job was The A. R. Briggs Construction Co., of Macon, Georgia, who was low bidder at $494,000.





Q-DECK AND Q-FLOOR ceilings are the smooth side of Robertson Roof Deck, white enameled. Insulation and built-up waterproofing have kept the building pleasantly cool in the hottest weather. In winter, the cells of the Roof Deck are used for conveying forced warm air, which emerges near the windows, from holes cut into the steel cells . . . a clever combination of radiant and convection heating.

Privacy is provided for wards by partitions of soundproofed Robertson Q-Floor units. These are located to permit circulation of air, above and below, and to facilitate floor cleaning.

Gregson & Ellis *Architects*

More Detailed Information

is available on this hospital, or other Gregson & Ellis buildings and on the most advantageous use of Robertson materials. Write for complete literature.

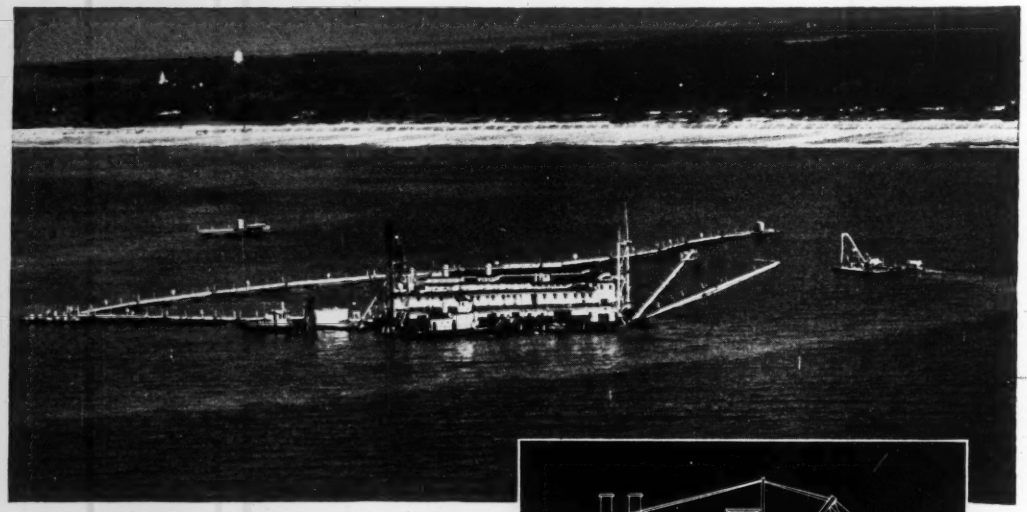
H. H. ROBERTSON COMPANY

2420 Farmers Bank Building
Pittsburgh 22, Pennsylvania

Offices in ALL Principal Cities in the U. S. A. and Canada

World-Wide Building Service

What's U. S. Rubber doing to build the world's largest man-made beach?



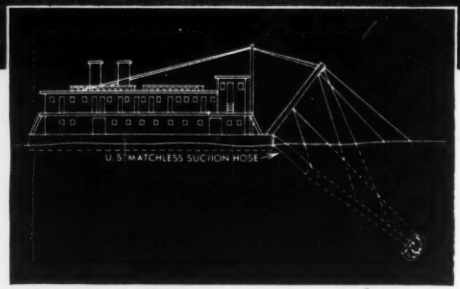


Photo shows dredge pumping sand to make the artificial beach on the Mississippi shore. It extends approximately 1500 feet into the stream. The diagram shows the cutter head which stirs up sand and silt. This in turn is drawn through the pipe, then through the U.S. Matchless Suction Hose to the pump and through the discharge line.

The dredge which has thus far sucked out over 6 million cubic yards of sand to build the 26-mile long beach from Henderson Point, Miss., to Biloxi, Miss., is equipped with U. S. Matchless® Hose. This tremendous job also includes the pumping of an additional 6 million cubic yards of river silt, sand and mud through this same hose. The sloping bathing beach, when finished, will also provide a defense for the sea wall in abnormally high tides. The "U.S." Hose, acting as a flexible connection between the cutter head and the dredge, is still in good condition and has plenty of service life left, despite its rugged treatment. No matter what your hose problem may be, consult United States Rubber Company.

PRODUCT OF

U.S. RUBBER
SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION · ROCKEFELLER CENTER, NEW YORK 20, N. Y.

volved, and later to the Bureau of the Budget, before forwarding to Congress.

Under the Transportation act of 1920, the board was charged with the duties of compiling, publishing and distributing information concerning water transportation. It also publishes reports on domestic ports, terminal facilities, and transportation lines and classified studies on foreign ports.

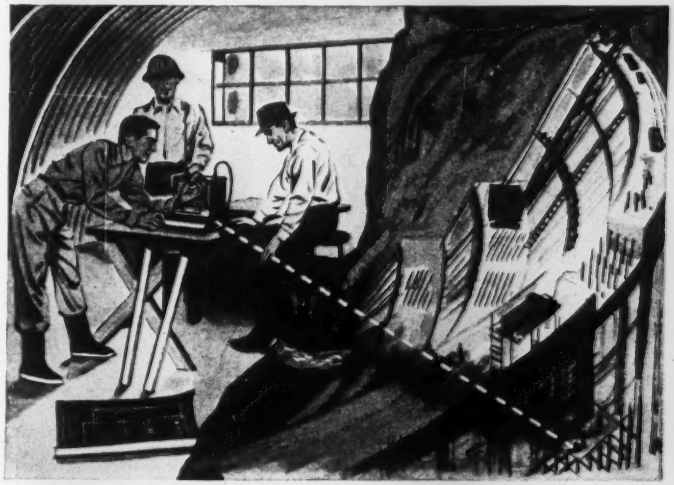
Careers . . .

• **Appointed**—Appointment of **W. H. Wisely** as an Illinois commissioner on the eight-state Ohio River Valley Water Sanitation Commission was announced today by Clarence W. Klassen, chairman. Wisely, a civil engineer, is executive secretary of the National Federation of Sewage and Industrial Works Associations . . . James Stewart & Co. Inc., the 108-year old construction firm with offices in New York City announced the following. **Vice Admiral John J. Manning** (CEC) USN (Ret.), formerly president, is now chairman of the board. M. Seth Horne, principal owner of the company, was elected president and Harold N. Isbitt, co-owner, assumes the office of executive vice-president . . . **Nomer Gray** and **Leopold H. Just** have been appointed associates in the firm of Ammann & Whitney, New York City and Milwaukee, Wis.

Wendell D. Anderson, C. E., who has traveled the southeast for many years in the interest of Clay Pipe Sanitary Engineering and Consulting Service has recently organized the Sanitary Engineering Service, Inc., Atlanta, Ga. . . . The appointment of **Thomas C. Kavanagh** as professor of structural engineering and chairman of the Department of Civil Engineering, New York University, has been announced by Dean Thorndike Saville.

• **Elected**—Deans of technology of four colleges and universities were elected to the executive committee of the Engineering College Administration Council at the 60th annual meeting of the American Society for Engineering held at Dartmouth College in New Hampshire two weeks ago. The new executive committee men are: **Dean George W. Gleeson** of Oregon State College, Corvalis, Ore.; **Dean Roy M. Green** of the University of Nebraska, Lincoln, Neb.; **Dean Thomas H. Evans** of Colorado College of Agriculture and Mechanics, Fort Collins Col.; and **Dean Webster N. Jones** of Carnegie Institute of Technology, Pittsburgh, Pa.

BUILDERS "LINK BRAINS TO THE HANDS" WITH NEW 2-WAY PORTABLE RADIOPHONE



CHICAGO, Ill.—(Special)—A fourteen-pound electronic wonder, the Littlefone*, is small alongside the vast mountains of steel and concrete that go into America's mighty dams, but construction engineers wouldn't part with the Littlefone for its weight in uranium.

"When you've climbed a 200-foot scaffolding on a big dam just once," says a veteran chief engineer, "that's when you'd stop and search the world over for a different answer!"

The answer was the Littlefone, a new, two-way portable radiophone that literally "links the brains to the hands" in construction jobs. Work crews even miles away can keep in constant touch with the engineering offices for split-second decisions that speed work, prevent accidents, and save time and money.

TAKE BUCKETS "OFF ICE"

On an upper Missouri River project, the Littlefone was pressed into service to smooth the flow of overhead cement "buckets" — huge buckets of dripping cement that jammed up "on ice" as the workmen say, at the pouring site. The Littlefone, from the pouring site to the filling point miles away, permitted proper timing— and saved thousands of man hours, and tons of wasted cement.

Throughout industry, the Littlefone extends the "voice of authority" into actual field operations. It patrols huge oil tank "farms" to speed reports on fire safety . . . it is a partner with railroaders, miners, lumbermen, oil and pipeline workers — helping industry to build quicker, more economically, and with greater safety.

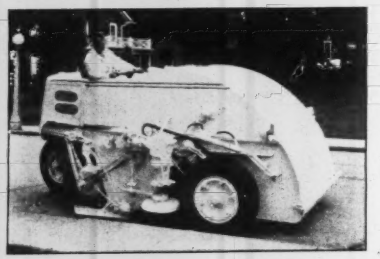
Hand Carry Model

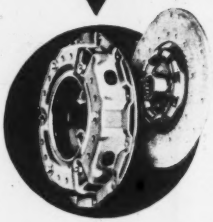
Write today for full specifications—find out how Hallicrafters Littlefone can save you time and money. Write Dept. L-E.

*Also available in 9½ pound models.

HALLICRAFTERS, CHICAGO 24, ILL.

"World's Largest Sweeper





Gobbles Up Street Dirt"

For over 20 years, ROCKFORD CLUTCHES have contributed to the efficiency of ELGIN Sweepers. The long life and low maintenance cost of these heavy-duty clutches have helped ELGIN Sweepers "sweep more miles of pavement, more often — at less cost." Let ROCKFORD engineers help plan efficient power transmission control for *your* product.

ROCKFORD CLUTCH DIVISION BORG-WARNER
313 Catherine Street, Rockford, Illinois, U.S.A.

B-W ENGINEERING MAKES IT WORK

B-W PRODUCTION MAKES IT AVAILABLE

ENGINEERING BULLETIN SENT ON REQUEST

ROCKFORD CLUTCHES

Core Drilling by Contract

Exploration for coal and other mineral deposits. Foundation test boring and grout hole drilling for bridges, dams and all heavy structures. *Core Drill Contractors for more than 60 years.*

JOY MANUFACTURING CO.
Contract Core Drill Division • MICHIGAN CITY INDIANA

MEN AND JOBS

• **Honored—S. K. Jones,** 80, dean of the levee contractors for the government, was honored at a birthday party by 100 members of the Mississippi Valley Flood Control Branch of the Associated General Contractors of America . . . **W. W. De Berard,** Chicago city engineer, has received the second distinguished service citation within a month recently when Beloit College honored him. Earlier he was cited by Northwestern University.

• **Resigned—Howard I. Stites,** city manager of Burbank, Cal., since 1933 and city engineer before that, has resigned from the post because of disagreements with the city council. Stites said that the council has encroached on administrative functions "to the point where the city manager no longer can effectively direct the operation of the city government."

ASTM honors and awards meeting of June 23-27

The Charles B. Dudley Medal, presented to authors of outstanding research papers, was awarded to Norman W. McLeod, engineering consultant, Department of Transport, Ottawa, Canada, for his paper, "Application of triaxial testing to the design of bituminous pavement."

The Richard L. Templin Award, given for meritorious papers describing new testing methods and apparatus, was presented to Thomas J. Dolan, research professor of theoretical and applied mechanics, University of Illinois, for his paper on "Electrically excited resonant-type fatigue testing equipment."

H. F. Gonnerman, assistant to vice president in charge of research, Portland Cement Association, and William Lerch, manager, department of applied research, Portland Cement Association, won the Sanford E. Thompson Award, given for outstanding paper on concrete and concrete aggregates.

The Award of Merit was made to the following men (among others) for intensive work on contributions in a specific field and aiding in numerous ways the general activities of the society: H. S. Mattimore, engineering consultant, Colonial Park, Pa.; Douglas E. Parsons, Chief of Building Technology Division, National Bureau of Standards, Washington, D. C.; Hugh M. Robinson, service engineer, Underwriters Laboratories, Inc., Chicago, Ill.

OBITUARIES

Benjamin Martin Sullivan, 83, civil engineer, died at Tampa, Fla., June 19. He headed the firm of Sullivan, Humphreys and Sullivan, civil engineers. A graduate of Erskine College and a Spanish-American War veteran, he worked in China and the Philippines for five years as an engineer. He went to Tampa in 1905 and served as assistant city engineer before opening his own practice.

Harry A. Hall, 54, Oconto, Wis., civil engineer and county surveyor there for many years; died June 16. He had worked in Alaska and many parts of the United States.

Joseph S. Waterman, 70, engineer, died in Tampa, Fla., June 22. He was graduated from Georgia Tech in construction engineering in 1901. He went to Tampa in 1925 and was active in the construction of many of the buildings in the heart of the business section. During World War 2 he was district manager for the production division of the War Production Board. At the time of his death he was president of the Gulf Coast Construction and Engineering Co., Ins., of Fort Lauderdale and Miami.

Peter Salvucci, 64, Waltham, Mass., contractor, died recently. He had filled contracts worth about $8 million for the State Department of Public Works since 1930. He built the Auburn by-pass and the Daniel Webster highway in Concord, N. H.; and had done considerable work on airports.

Hugh McLaren, 66, vice-president and treasurer of Vermilya-Brown Co., Inc., builder, died at Jamaica, New York City, June 25. He studied engineering and architecture at Cooper Union and had been with his company and its predecessor for 50 years and had supervised the construction of many important buildings in the metropolitan area.

David R. Bebb, 68, of Bebb Bros., contractors, of Columbus, Ohio, died there June 22.

Leo S. Herzog, 68, a construction engineer for 40 years with the Edgar A. Levy Construction Co. New York, died June 10. During World War I he supervised construction as a captain in the Quartermaster Corps.

Wm. Bell Foster, 63, vice-president of Charleston Constructors, Inc., died at Charleston, S. C., June 12.

TECO TRUSSED RAFTERS

for Commercial Buildings
Churches
Homes

Industrial Buildings
Schools
Apartments

Sales and service building using 40' trussed rafters furnished by Roof Structures, Inc., Webster Groves, Mo.

Early in 1946 our Engineering Department was called upon to submit suggestions for 24-foot-span trussed rafters for a large project of veterans' homes. The builder intended using low-cost non-bearing interior walls and so required a roof and ceiling framing system supported solely by the exterior walls.

The triangular truss developed was a combination of 2 x 4's and 2 x 6's put together with 2½" diameter Teco split rings in overlapping joints. The trusses were placed 24 inches on centers to make the most of the inherent strength of the wood. This permitted the use of regular one-inch roof sheathing and available ceiling materials.

Since then, over 65,000 housing units have been built with Teco trussed rafters.

These economical rafters are also profitable used for commercial, industrial, church and school buildings.

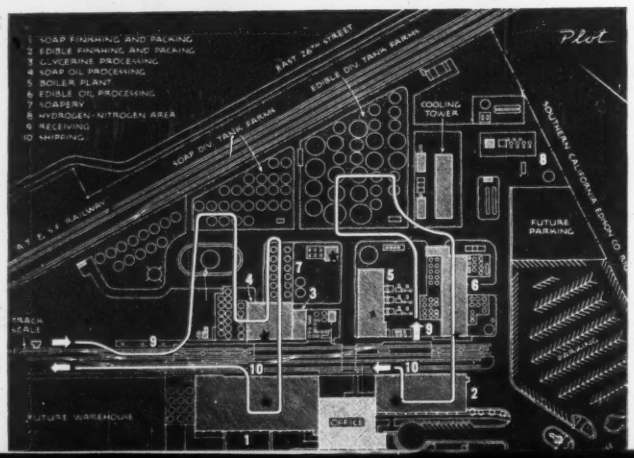
Fabricators in all sections of the country are ready to serve you.

Specify timber—there's plenty of it for early delivery.

TIMBER ENGINEERING COMPANY, 1319 18th St., N.W., Washington 6, D. C.
Please send me FREE copy of "Wood Frame Teco Trussed Rafters."
We plan to build a _____
NAME _____
COMPANY _____
STREET _____ CITY _____ STATE _____
ENR

Office building of the new Lever Brothers plant, Los Angeles, California, reflects the trend of today's industrial design.

★ Six Westinghouse Power Centers, spotted in black, are the heart of the plant's electrical distribution system which provides reliable service under all conditions.



PLANNED POWER PAYS

They matched modern plant design with modern power distribution

This 25-million-dollar Lever Brothers plant incorporates the most modern advances in design, layout and construction methods. And its system for distributing electrical power is as modern as the plant—assuring uninterrupted service under all conditions.

The secondary network system was specified in the early planning days by Bechtel Corporation—the engineers and constructors—with Westinghouse assistance. It contains six interconnected power centers that maintain service even though an electrical disturbance may fault a primary line. Secondary faults are isolated quickly. The ultimate in reliable power is assured.

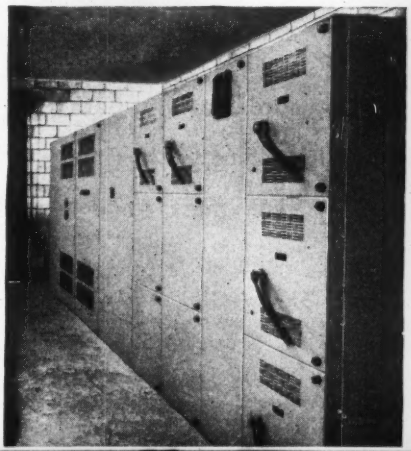
Early planning has also taken full advantage of the flexibility of factory-assembled Westinghouse Power Centers. These compact, standardized units save valuable space . . . minimize layout problems. Their dry-type transformers permit them to be located safely anywhere in the plant. Additional units can be added easily, as loads and capacity increase.

CONSIDER THIS: A plant's distribution system is a vital design consideration. It must be planned at the blueprint stage . . . treated as an integral part of the building or expansion program. Today, the power needs of a modern plant require this kind of planning—coupled with completely co-ordinated equipment.

Westinghouse offers you assistance on *both* of these requirements . . . and backs them with years of experience, gained throughout all industry. You benefit by getting more freedom in design techniques . . . by providing your customer with the best system economically possible for *his* plant.

There is one best system of distributing electrical power for *every* plant. Let Westinghouse help you select it on your next job. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-94955

Space problems were minimized with six of these compact Westinghouse ASL Dry-Type Network Power Centers. They are standardized, factory-assembled units . . . can be expanded easily as power needs grow.



YOU CAN BE SURE...IF IT'S Westinghouse

SYSTEM PLANNING

A Forecast by MARION

THIS NEW MARION 191-M . . . .

. . . . is the world's biggest loading shovel—the biggest two-belt crawler shovel built. It is shown at work loading stone for a big construction project in Kansas. The 191-M has loaded up to 1,600 yards an hour in big 10-yard bites that fill trucks in the 50-ton class in 3 passes.

MARION predicts the 191-M will have a bright and busy future in construction. Some of the reasons:

- 10 Cu. Yd. Standard Shovel with 43' 8" Boom & 27' 4" Handle
- All-Electric or Diesel Electric Power, Ward-Leonard Control on Both
- An extremely Heavy-Duty Shovel with Small-Machine Cycle Time
- Greater Travel Speed and Maneuverability than most smaller machines

For more of the reasons, write, wire or phone Marion Power Shovel Co., Marion, Ohio
Since 1884. Offices in all Principal Cities

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
August Materials, and Labor Prices will appear in August 7, 1952 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash. dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.; per block		CONCRETE Ready Mixed 1:2:4, over. 50 c.y., del.
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand	grav.	Lt. wgt. agg.
Atlanta	$3.81	$3.50	3.30	$2.00	$2.00	$1.75	$2.10	$2.10	$1.65	$1.85	$0.19	$0.19	$11.50
Baltimore	3.76	3.45	3.38	2.50‡a	2.50‡a	2.00‡a	2.70‡a	2.80‡a	2.60‡a	2.55‡a	.17	.17a	10.80
Birmingham	3.11	2.81	....	2.24n	2.24n	1.94n	2.50	2.50	1.10	1.30	.165	.165	9.75
Boston	4.01	3.69	3.81	2.50a	2.50a	2.50a	1.50a	1.60a	....	....	.20	.22a	11.50k
Chicago	3.33	3.02	....	3.00‡b	3.00‡b	3.40‡b	3.00‡b	3.00‡b	2.00‡	2.00‡	.22	.22b	11.50
Cincinnati	3.53	3.23	3.32	2.00‡c	2.00‡c	2.05‡c	2.35‡*	2.35‡*	....	....	.21	.225a	10.95
Cleveland	N. A. in C. L.		....	2.05ef	1.85f	1.70	3.81a	3.81a	2.85‡	2.85‡	....	.23	13.00g
Dallas	2.95	2.65	2.70	2.18	2.28	1.84	2.22	2.38	....	....	.125a	.215	9.30
Denver	3.80	3.59	3.89	1.85	2.00	1.20	....	....	....	....	.22	.255a	10.50
Detroit	3.27	3.00	3.05	4.25‡b	4.25‡b	3.75‡b	4.25‡	4.25‡	4.25‡	4.25‡	.19	.20a	10.30f
Kansas City	3.30	3.03	3.15	1.85‡	1.85‡	1.50‡a	2.00‡a	2.00‡a	....	....	.23ag	.23c	10.95h
Los Angeles	4.00a	3.60a	4.72	1.95a	2.20a	1.95a	2.08a	2.08a	....	....	.11jm	.22m	10.43ik
Minneapolis	3.80d	3.49d	3.41	2.30‡ag	2.30‡ag	1.35‡ag	2.50‡ag	2.50‡ag	....	....	.21ik	....	11.25fk
Montreal	3.01ac	2.86ac	....	2.50	2.50	2.25	1.05f	1.30f	....	....	.20	.20a	9.65ak
New Orleans	3.20	3.02	3.18	2.32	2.32	1.82	....	....	1.05	1.25	.25	....	12.90
New York	3.86	3.55	3.43	2.35‡k	2.35‡k	1.60‡k	2.50‡l	2.50‡l	....	....	....	....	11.35am
Philadelphia	3.43/3.82‡	3.12/3.49‡	3.43/3.48‡	2.75‡	2.75‡	2.15‡	2.10‡	2.15‡	1.75	1.65	.22/.25	....	11.50
Pittsburgh	3.32	3.04	3.32	2.15‡	2.15‡	2.10‡	2.60‡	2.60‡	2.15	2.15	.23d	.23d	12.00
St. Louis	3.27/3.48b	2.84/3.10b	3.05/3.22	2.90am	2.90am	2.30/2.70am	1.70f	1.70f	1.25	1.25	.21es	.27es	10.40
San Francisco	3.36	2.96	....	1.92	1.92	2.02	2.02	2.02	....	....	....	.22el	10.30e
Seattle	3.75a	3.25a	4.50n	3.00‡bm	3.00‡bm	3.00‡bm	3.50‡bm	3.50‡bm	....	....	.24j	.332‡j	10.95j

‡Delivered. * Prices incl. dealers comm. except as noted.
CEMENT: a Subj. to 10¢ dis. b Less 2% for cash. c CL price dealers' comm. not incl. d Dealers sell only LCL. h LCL.
SAND, GRAVEL, STONE & SLAG: a Truck lots. b Per cu. yd. c 5 tons or more. e ¾". f Pea gravel. g Less 5% for cash. h Less than 5 tons. i Sales tax incl. j F.o.b. quarry. k Barge lots asd. l F.o.b. scow Hudson river. m Less 2% for cash. n F.o.b. cars.
CONCRETE BLOCK: a Cinder. b Waylite. c Haydite. d Celocrete. e 5‡ x 8 x 12 in. f 8 x 4 x 16. g F.o.b. truck at job. i Less 2% for cash. j Less 1% for cash. k 8x8x18. l F.o.b. plant San Rafael. m F.o.b. yard.
READY MIXED CONCRETE: a 5 cu. yds. or over del. Man. b 25 cu. yds. or more. c 10–100 cu. brackets. e 2,000 lb. conc. f 2500 lb. comp. g Aver. haul 7–9 mi. zone. h Less 50¢ for cash. i 5% off for cash. j 2% off for cash. k Sales tax included. l 1:2½:4. m F.o.b. yard. n Plus escalator clause.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month: on carload deliveries, no trucking, same as dealer cash discount 10c. per bbl. for payment within 15 days of date of invoice. Subject discount 10c. per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 30¢ per bbl., not refundable

	Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$2.60†	Buffington, Ind.	$2.55†	Steelton, Minn.	$2.65†	Muskegon, Mich.	$2.70†	Toledo, O.	$2.60†
Clinchfield, Ga.	2.60†	Independence, Kan.	2.50†	Leeds, Ala.	2.45†	Saginaw, Mich.	2.60†	Milwaukee, Wis.	2.75†
Kingsport, Tenn.	2.60†	Hannibal, Mo.	2.55†	Duluth, Minn.	2.65†	Wyandotte, Mich.	2.60†	Green Bay, Wis.	2.75†
West Des Moines, Iowa	2.65†	Northampton, Pa.	2.60†	Hudson, N. Y.	2.60†	Buffalo, N. Y.	2.60†	Ironton, O.	2.60†
Nazareth, Pa.	2.60†	Universal, Pa.	2.65†	Alpena, Mich.	2.50†	Oswego, N. Y.	2.75†	Montreal City	2.61
Bath, Pa.	2.60†	Waco, Tex. (+ 10¢ tax)	2.50†	Detroit, Mich.	2.60†	Cleveland, O.	2.60†	W. Winfield, Pa.	2.65†

†*Prices to hold for third quarter of 1952.*

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration		CUTBACK ASPHALT Per ton		ROAD OIL Per gal.	ASPHALT EMULSION (Quick-breaking) Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	$73.00	$35.00	$2.25	$26.00	$33.25	$0.1975	$0.339	$0.095w	$0.185w	$0.105	$0.115	$0.225
Baltimore	150.00‡	58.00‡	—....	22.00	.....	.0809	0.15	.09w	.17w	.09	.09	0.12
Birmingham	.....	45.50i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	24.50a	35.50a	22.00ax	35.50ax	.....	.....	.09a	.105a	.22a
Chicago	155.00‡	90.00‡b	4.40/4.60‡f	20.25b	30.25b	19.25bx	29.25bx	.0875bw	.10bw	.075b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	—.....	—.....	—.....
Cleveland	200.00	55.00d	4.12g	23.00[4]	.....	23.00[4]	.....	.1025[4]w	.194w	....	.114	.194
Dallas	e	40.00	e	24.05	43.09	.1016	.2103	27.09	47.87	.0980	.1041	.2128
Denver	—....	48.00	—....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	—....	92.00	—....	26.82	....	26.82x	.....	.117w	.....	.0925	.....	.279r
Kansas City	e	e	e	18.55cl	...	.055	.....	.0725cw	.....	.0635c	0.435	.....
Los Angeles	e	—....	e	15.50dmx	...	15.50dx	....	17.00dz	.....	16.00dv	.0825f	.1525f
Minneapolis	—....	—....	2.83k	23.90	....	22.90	.....	.0944w	.....	.0844	.0985	.....
Montreal	—....	e	e	27.10n	36.65n	.135n	.183n	16.30nu	18.80nu	.132n	.184ns	.225ns
New Orleans	—....	—....	—....	17.50s	....o	17.50sx	.....o	.085sw	.....o	.0882	.085	.....
New York	.....	.....	3.12f	26.26q	47.59q	25.26st	46.58st	.1071w	.2021w	.1071	.1072	.1993
Philadelphia	175.00	110.00	4.06	22.00	.....	.....	.....	.095u	.....	.....	.....	.....
Pittsburgh	165.00	48.00	4.60	23.00	37.00	.10	.20	27.00	39.00	.095	.09	.205
St. Louis	.....	.....	.....	18.68f	.....	.1698	.....	.0865 / .089w	.....	0.15	.0975	.....
San Francisco	.....	55.00v	.....	17.00q	32.50qp	17.00qkv	32.50qkv	19.00q	36.50q	17.50w	.085y	.....
Seattle	.....	.....	.....	17.00A	37.50A	16.25Aw	.....	19.50A	....	18.50Aa	.095A	.105Ar

‡ Delivered.
PAVING BRICK & BLOCK: a CL. b 3½ x 4 x 8½. c 2½ x 8½ x 4. d LCL, truck deliveries. e Not used. f 2" interior 6¢ treat. g 3". h 8¢ treat. i 3 x 3½ x 8½.
ASPHALTS: a Price at plant, Everett, Mass. b F.o.b. refinery, Lockport, Ill. c F.o.b. Sugar Creek, Mo. d F.o.b. refinery, El Segunda. e F.o.b. Baton Rouge. f F.o.b. Wood River or Roxana, Ill. g F.o.b. Richmond, Calif. h F.o.b. Martinez. i Bulk refinery. j F.o.b. refinery, Inglewood, Calif. k 50–110 penetr. l Less than 100 penetr. m 40–80 penetr. n Tax incl. o Drums not avail. p Shipped in steel bbl. q 40–85 penetr. r In customer's drums. s Shipped in drums, per drum. t 85–300 penetr. u Per 100 gal. v Per ton. w Per gal. x Also tank trucks. y F.o.b. Oakland. A F.o.b. refinery Cleveland.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	Light	Re-rolled	TRACK SUPPLIES Angle Bars	Std Spikes	Tie Plates	Track Bolts
Birmingham Area	$3.65	$3.70	$3.70	$7.85		$72.00	$80.00	Not	$4.70	$6.15	$4.50	
Chicago Area	3.65	3.70	3.70	7.85	$4.45	72.00	80.00	avail-	4.70	6.15	4.50	
Pittsburgh Area	3.65	3.70	3.70	7.85	4.45	72.00	80.00	able	4.70	6.15	4.50	$9.85
Buffalo Area	3.70	3.70	3.70	7.75	4.45	72.00	80.00	....	4.70	6.15	4.50	9.85
Cleveland	....	....	3.70	7.85	4.45	.....	.....	....	....	....	....	9.85
Youngstown Area	....	....	3.70	....	....	.....	.....	....	....	6.15	....	....
Geneva	3.65	3.70	....	....	....	.....	.....	....	....	....	....	....
Los Angeles	....	....	4.40	....	....	.....	.....	....	....	6.15	....	....
Pueblo	3.65	3.70	3.70	....	....	72.00	80.00	....	4.70	6.15	4.50	9.85

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS 5 tons to carload lot *b* New billet	Rail steel	Add switch	$/cwt for Del	EXPANDED METAL LATH *k* Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING *d* Per 100 sq. ft., carload lots 4x16 in., No. 5 & 10 wires	4x12 in., No. 8 & 12 wires	6x6 in., No. 6 & 6 wires
Atlanta	$7.01	$6.84	$6.84	$.025	$...	$36.00‡	$40.00‡			
Baltimore	6.15	5.49*l*	....	....	....	42.00	45.00			
Birmingham	5.70	5.75	5.75	.05	.15	47.00*p*	52.00*p*			
Boston	6.20*a*	6.19	6.19	....	....	39.50	43.50			
Chicago	5.70	4.95*ff*	4.95*ff*	.0625	....	45.00*C*	50.00*C*			
Cincinnati	6.24*ak*	5.88*r*	....	....	.15	38.50*azee*	41.00*azee*			
Cleveland	5.95	4.81*r*	....	....	....	37.00‡	40.00‡			
Dallas	8.85	7.00	7.00	....	....	49.00	52.00			
Denver	7.20	7.10*c*	....	....	....	54.50*s*	65.00*js*			
Detroit	6.12	5.74*n*	....	....	.20	53.00	58.00			
Kansas City	7.07*nn* Est	6.67*t* Est	....	....	....	41.00 Est	44.00 Est			
Los Angeles	6.40*hh*	6.21*g*	....	....	....	48.00	54.00*kk*			
Minneapolis	6.15*hh*	7.12*ll*	7.12*ll*	....	....	37.00	39.50			
Montreal	6.55*iB*/6.75*A*	4.75*i*	4.75*g*	....	....	44.10*h*	46.80*h*			
New Orleans	....	5.55*ok*	....	.05	....	40.00	40.00			
New York	6.50*r*	6.25	6.25	....	.30	38.50*st*	45.00*st*			
Philadelphia	6.10	6.15	....	....	....	38.00‡	42.00‡			
Pittsburgh	5.40/5.60	5.40/5.60	....	....	.10	34.00	36.00			
St. Louis	6.02*a*	5.45*c*	5.45*c*	....	....	47.00*aa*	53.00*aa*			
San Francisco	7.75*ii*	6.50*ll*	....	....	....	40.50	43.50			
Seattle	4.30*e*	5.55*ol*	....	....	....	57.00*smm*	47.00*smmx*			

A.P.M.* Joliet, Illinois, Donora, Penn.: $2.66
F.o.b. Mill: Monessen, Penn.: $2.76

A.P.M.* Joliet, Illinois, Donora, Penn.: $1.87
F.o.b. Mill: Monessen, Penn.: $1.93

A.P.M.* Joliet, Illinois, Donora, Penn.: $2.79
F.o.b. Mill: Monessen, Penn.: $2.89

* At Producing Mill

‡ Delivered. *b* 1–5 tons, add 35¢. Less than 1 ton, add 50¢. *c* 20 tons or over base. *d* Mill price plus freight. *e* F.o.b. plant. *f* Includes delivery in free delivery zone. *g* 10,000 to 39,999 lbs. *h* List price. Dominion tax exempt. Provincial and Municipal tax extra. *i* Plus Dominion, Provincial and Municipal sales tax. *j* Price per ton. *k* F.o.b. citv. *l* Intermediate and hard grade, new billet. *m* Per sq.yd. *n* 5–10 tons. *o* 5 to 20 tons base. *p* Del. of 500 sq. yd. or more. *q* Std. ribbed, 4 lb. per sq. yd. *r* 5 tons or over. *s* LCL. *t* Asphalt coated. *u* Note: Revised size extra — 1 in., 1¼ in., 1½ in., 10¢; 1¾ in., 15¢; ¾ in., 25¢; ⅝ in., 50¢; 1 in., 80¢; ½ in. $1.00. *v* 20 tons. Straight. *w* Copper bearing. *x* 2.5 lb. per sq. yd. *y* $0.0093 transportation tax included. *z* Copper alloy. *aa* Delivered truck to job. Contractor to do unloading. *dd* F.o.b. dock. *ee* F.o.b. cars. *ff* Carload lots. *gg* Including sales. *hh* 10,000–19,999 lbs. *ii* 400–999 lbs. *kk* ½" ribbed. *ll* 5 to 8 tons, f.o.b. city. *mm* 2% off for cash. *nn* 1–5 tons. *oo* 10 tons to CL. *a* 2000–9999 lbs *A.* Amer. struct'l shapes. *B.* Canadian shapes. *C.* Deliv to contractor.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in. *a*	ASBESTOS CEMENT PIPE per lin. ft., f.o.b. city 6" Pr. Cl. 150	12" Sew Cl. I	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-41T std. 8 in. s.s.	std. 12 in. s.s.	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4-24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14-41 12 in.	24 in.
Atlanta	$99.00	$1 44	$2 42								
Baltimore	109 00	1 46	2 42	546	1 053	4 275*A*	11 377*5A*	178 20	274 80	90	2 45
Birmingham	93 00	1 44	2 42	42	75	2 99		210.00‡	375 00‡	1 25*m*	2 75*m*
Boston	113 00	1 46	2 20	553*uvz*	1 066*5uvy*	4 41*uvy*	11 90*uvy*	187 80‡	289 20‡	1 55*mg*	3 80*mg*
Chicago	107 00	1 44	2 20	70*m*	1 35*m*	5 62*m*	13 50*m*	150 00‡	270 00‡	80	2 80
Cincinnati	106 00	1 46	2 29	567*y*	1 093*y*	4 32*y*	11 175*y*	164 40‡	251 10	75*m*	2 80*m*
Cleveland	108 00	1 46	2 29	49*z*	945*z*	3 96*z*	10 66*z*	158 00*m*	245 65*m*	75*m*	2 95*m*
Dallas	107 00	1 46	2 54	436	822	3 231*b*	9 17*b*			49	1 60
Denver	115 00	1 55	2 54	434*dd*	744*dd*	3 18*dd*				74*m*	2 50*m*
Detroit	108 00	1 46	2 29	70	1 35	5 35	14 40	240 00*m*	360 00*m*	80	3 20
Kansas City	106 00	1 46	2 29	515	92	3 64	9 20	216 70	465 00	70*g*	3 00*g*
Los Angeles	122 00	1 53	2 29	51*f*	1 07*f*	5 21*f*	13 06*f*	228 20*f*	348 90*f*	85	2 40*ff*
Minneapolis*	112 00	1 50	2 42	66*mo*	1 20*mo*	4 85*mo*				1 36*h*	3 87*h*
Montreal	100 00			85*z*	1 50*z*	5 25*z*				1 17*j*	3 11*j*
New Orleans	101 50	1 44	2 42	513	93	5 15		229 70*bb*	402 00*bb*	65	2 29
New York	111 35	1 46	2 20	64	1 21	4 86	12 71			1 15	2 50
Philadelphia	110 00	1 44	2 20	65	1 25	4 95*A*	12 65*A*	300.00‡	350 00‡	1 55*h*	3 75*h*
Pittsburgh	109 00	1 46	2 20	406*m*	772*m*	2 85*m*	7 652*m*	147 00	230 00	1 05*h*	2 50*h*
St. Louis	103 00	1 46	2 29	51	93	3 65	8 58	160 00*l*	300 00*l*	1 20*il*	2 70*il*
San Francisco	122 00	1 55	2 29	514	1 20*d*	5 03*d*	12 57*d*	240 00*l*	400 00*l*	95	3 20
Seattle	124 00	1 55	2 42	516	916			150 00*c*		86*ee*	2 56*ee*

‡ Delivered. *a* Class B & heavier. Based on existing freight rates; subject to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $7 per ton additional. 30 in. and larger, usually, $1 per ton less. *b* Extra strength ASTM *C* 200–44T. *c* 4-in., $96; 6-in., $144. *d* SS361-A. *e* 30-in. *f* F.o.b. factory. *g* Culvert pipe. Reinforced, ASTM C76–41. *h* Reinforced, ASTM C75–41. *i* Reinforced, ASTM C76–37. *j* Centrispun. No. standard specifications in Can. *l* F.o.b. plant. *m* Truck delivery. *o* Listed price is based on LCL (no minimum). *p* Less than 5 tons, per price per ft. *t* Within switching limits. *u* ASTM C13–40. *v* C.L.f.o.b. origin, freight allowed. *x* 2 ft. lengths. *y* 3 ft. lengths. *z* CESA A 60–1941 specifications used. *aa* *Extra strength ASTM C 200–50.* A standard strength. * 6' to 8', $1.67 per ft.; carlots, F.o.b. track Class 150. *bb* Freight allowed to destination in city. *cc* Truck loads; f.o.b. plant, Newton. *dd* LCL delivered, f.o.b. truck. *ee* 1% off for cash. *ff* 21.

	*WROUGHT STEEL PIPE— (Full standard weight)														
	3½ to 6 in. Butt Weld† Black %	3½ to 6 in. Butt Weld† Galv. %	16.5*a*	14.0*a*	17.0*c*	16.5*a* 17.0*cb*	3 80*mg*	3 80*a* 3 80*cb*	38.0*c*	16.5*a*	24.0*cb*	10.0*cb*			
Atlanta															
Baltimore			36.5*a*	33.5*a*											
Birmingham															
Boston															
Chicago															
Cincinnati															
Cleveland															
Dallas															
Denver															
Detroit															
Kansas City															
Los Angeles															
Minneapolis*															
Montreal															
New Orleans															
New York															
Philadelphia															
Pittsburgh															
St. Louis															
San Francisco															
Seattle															

	2½ & 3 in. Butt Weld† Black %	2½ & 3 in. Butt Weld† Galv. %	4 in.	4½ in.	5 in.	6 in.	8 in.	10 in.	12 in.	14 in.	16 in.	18 in.	20 in.	24 in.	30 in.
Atlanta															
Baltimore			25.0	23.5	22.5										
Birmingham															
Boston															
Chicago															
Cincinnati															
Cleveland															
Dallas															
Denver															
Detroit															
Kansas City															
Los Angeles															
Minneapolis*															
Montreal															
New Orleans															
New York															
Philadelphia															
Pittsburgh															
St. Louis															
San Francisco															
Seattle															

Mill	2½ & 3 in. Butt Weld† Black %	2½ & 3 in. Butt Weld† Galv. %	4 in.	4½ in.	5 in.	6 in.	8 in.	10 in.	12 in.	14 in.	16 in.	18 in.	20 in.	24 in.	30 in.
Lorain, Ohio	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
Aliquippa, Pa., Mid	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
Sparrows Pt., Md	41.5	41.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
Youngstown, O.			43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
Indiana Harbor, Ind.			42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5
Sharon, Pa															
Wheatland, Pa															
Pittsburgh, Calif															
Fontana, Calif															

† Threaded and coupled. *a* 3½ to 4 in. *b* Continuous weld. *c* 5 and 6 in.

* WROUGHT STEEL PIPE: Discounts from standard list consumers carload prices. Base price approx. $200 per net ton. List prices per ft.: *Butt Weld:* ¼ in., 5½¢; ⅜ in., 6¢; ½ in., 6¢; ¾ in., 8½¢; 1 in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. *Lap Weld:* 3½ in., 92¢; 4 in., $1.09, 5 in., $1.48; 6 in., $1.92. Freight rates to destination to be added to price plus 3 percent tax on transportation.

WROUGHT IRON PIPE: List prices per ft. same as wrought steelpipe. Discount for Pittsburgh base. *Butt Weld* — 1 in. black, + 20.0, galv + 50.0; 1¼ in. black, + 20.0, galv, + 49.5, 1½ in. black, + 14.0 galv. + 46.0; *Lap Weld* — 2½ in. to 3½ in. black + 20.5, galv. + 48.5; 4½ in. to 8 in. black + 17.5, galv. + 45.0. Freight rates to destination to be added to name delivered price.

The Plane That Doesn't Need an Airport!

PIPER SUPER CUB

Call it a sky jeep, call it a flying truck, call it the most useful piece of equipment you could add. In any case, you have the right description for the Piper Super Cub that takes off or lands in less than 50 yards on rough, unprepared ground.

Here's a plane that multiplies the work supervisory personnel can do or which can deliver a quarter-ton of freight right to where you want it.

Imagine how useful the Piper Super Cub could be for you—doing many jobs so much more quickly than by auto or truck even for short trips. Few planes are so safe and easy to fly—none so inexpensive.

Your Piper dealer would be glad to demonstrate. For his name and free, colorful brochure on Piper planes write Dept. 7-T.

In Construction Work Pipers are in wide use for

- Speeding supervisory personnel from job to job
- Survey, inspection and patrol work
- Reducing "down time" by rushing emergency parts
- Transporting men and materials
- Rushing medical aid
- Aerial photography
- Customer service

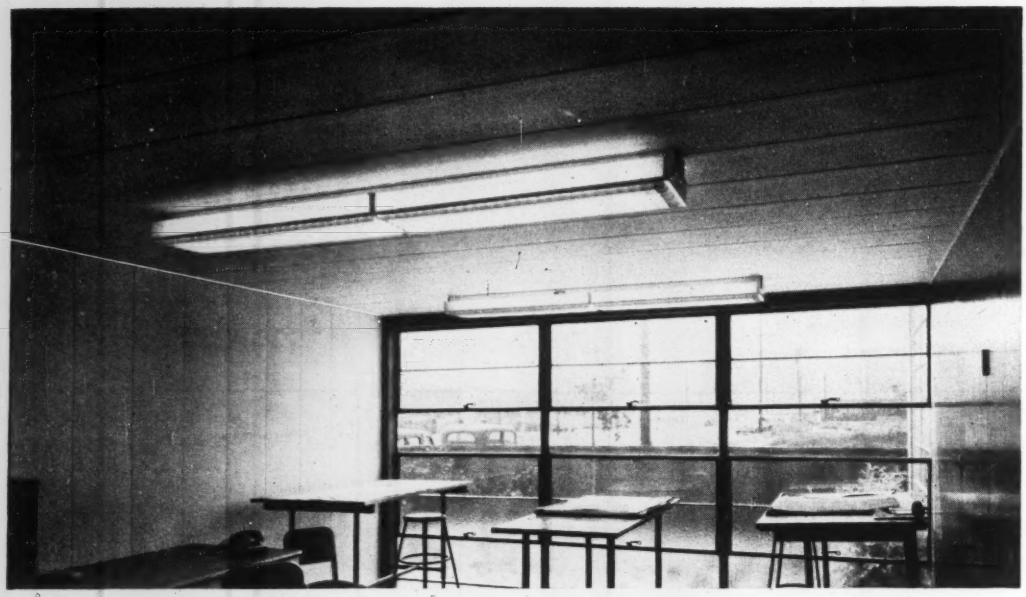
PIPER AIRCRAFT CORPORATION

Lock Haven, Pennsylvania

ALSO THE FOUR-PASSENGER PIPER PACER AND TRI-PACER

Piper also makes one of the most widely used four-passenger airplanes—available in two models—the Pacer with standard landing gear for maximum performance and the Tri-Pacer with tricycle gear for flying ease. Better than 130 mph cruising speed with over 575 mile range provides remarkable cross-country transportation *with extraordinary economy.* Quiet, comfortable cabin has easily removable rear seat for cargo hauling.

Tri-Pacer model with tricycle gear and simplified controls is so easy to fly that people have soloed it after one day of instruction.



Combination Acoustical-Structural Ceiling of Fenestra "AD" Panels in Architectural Office—Walter R. Steyer Office Bldg., Los Angeles, California. The side wall at left is Fenestra "C" Panels. *Architect-Contractor:* Walter R. Steyer.

Fenestra gives you quiet without a cover charge

No bills for covering this ceiling with special material. Here, the silencer *is* the ceiling . . . and the structural subfloor or roof above.

Fenestra* Acoustical "AD" Metal Building Panels lock together to form a solid structural part of the building—saving building time, labor, materials and money.

An "AD" Panel is a strong metal box beam with a flat, smooth surface top and bottom and open space between. The top surface forms the subfloor or roof deck. The perforated bottom surface forms the ceiling. In the open space between, is glass fibre insulation.

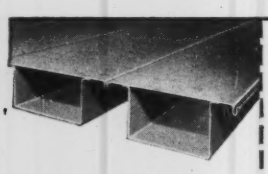
This new kind of an acoustical ceiling is practically indestructible. You can wash it or paint it without hurting its acoustical efficiency. It is noncombustible. It is there, good looking and efficient, for the life of your building.

Write us about it so we can give you the whole money-saving story—Detroit Steel Products Company, Dept. ER-7, 2286 East Grand Blvd., Detroit 11, Michigan.

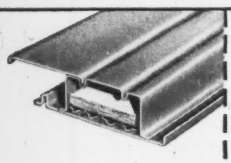
*Trademark

Fenestra METAL BUILDING PANELS

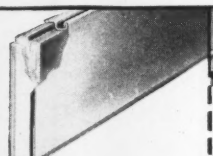
. . . engineered to cut the waste out of building



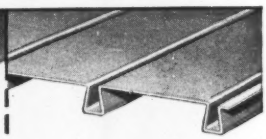
"D" Panels for floors, roofs, ceilings. Standard width 16". Depth 1½" to 7½".



Acoustical "AD" Panels for ceiling-silencer-roof. Width 16". Depth up to 7½".



"C" Insulated Wall Panels. Standard width 16". The depth is 3".



Holorib Roof Deck. 18" wide—lengths up to 24'. Surface can be plain or acoustical.

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F. O. B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 20 ft.

(Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta	† $75.00	$78.00	$69.00	$71.00	$75.00	$78.00	$77.00		
Baltimore	* 90.00	92.00	75.00	75.00	80.00	85.00	110.00		
	109.50g	*109.50g*	*109.50g*	*109.50g*	*109.50g*	*108.00g*	*109.50*	*$119.50*	*$119.50*
Birmingham	† 83.50	83.50	70.50	80.50	83.50	85.50	95.50		
	85.50	*85.50*	*80.50*	*79.50*	*78.50*	*78.50*	*85.50*	*85.50*	*85.50*
Boston	104/108*a*	108/110*a*	99/106*a*	98/100*a*	98/100*a*	98/100*a*			
	* *95.00*	*95.00*	*108/112*	*108/112*	*108/112*	*108/112*	*120.00*	*128.00*	*128.00*
Chicago	**100.00	105.00	92.00	100.00	101/102	105/106	105.00		
	108.00	*104/105*	*104/105*	*108.00*	*108/110*	*108/110*	*110.00*	*110.00*	*110.00*
Cincinnati	* 99.00	105.00	88.00	98.00	105.00	110.00	122.50		
	112.50	*112.50*	*114.50*	*114.50*	*114.50*	*116.25*	*140.50*	*140.50*	*140.50*
Cleveland	** 92.00	98.00	86.00	89.00	97.00	99.00			
			108.00	*108.00*	*112.00*	*112.00*	*115.00*	*120.00*	*120.00*
Dallas	†† 78.00	80.00	69.00	58.00	59.00	59.00	98.00		
Denver	* Not in stock		*153.00*	*132.00*	*131.00*	*130.00*	*143.00*	*158.00*	*158.00*
Detroit	‡ 108.00	112.00	102.00	110.00	114.00	115.00			
	101.50	*102.50*	*111.50*	*112.25*	*111.25*	*110.00*	*118.75*	*122.50*	*122.50*
Kansas City	* 122.00	122.00	122.00	122.00	122.00	122.00			
	122.00	*122.00*	*122.00*	*122.00*	*122.00*	*122.00*	*147.50*	*157.50*	*157.50*
Los Angeles	‡ *90.00*	*90.00*	*90.00*	*90.00*	*90.00*	*90.00*	*114.00*	*124.00*	*114.00*
Minneapolis	# *130.00*	*130.00*	*135.00*	*135.00*	*135.00*	*135.00*	*150.00*	*150.00*	*150.00*
Montreal	*ab*85.00	90.00	85.00	85.00	90.00	100.00			
	175.00	*175.00*	*175.00*	*175.00*	*175.00*	*175.00*	*175.00*	*175.00*	*170.00*
New Orleans	† 100.00	100.00	92.50	85.00	90.00	94.00	118.00		
	† *90.00*	*100.00*	*108.25*	*99.25*	*97.50*	*97.50*	*130.00*	*122.50*	*120.00*
New York	‡ 105/109	109/113	105/110	112*e* /117*e*	115/120	120/125	150/160		
			Range from $120.00 to $125.00				*135/150*	*149/155*	*149/155*
New York	** 94.00	97.00	82.00	92.00	95.00	98.00	120.00		
	98.00	*98.00*	*110.00*	*109.00*	*109.00*	*110.00*	*115.00*	*125.00*	*125.00*
Philadelphia			Range from $114.00 to $127.00				114/127		
			Range from $125.00 to $150.00				*130/140*	*150.00*	*150.00*
Pittsburgh	†		Range from $90.00 to $95.00			100/110			
			Range from $100.00 to $120.00			*110/120*	*140/155*	*145/155*	
St. Louis	*c*108.00*e*	111.00*e*	95.00*d*	108.00*e*	114.00*e*	118.00*e*			
			119.00e	*124.00e*	*124.00e*	*125.00e*	*200.00e*	*200.00*	*200.00*
San Francisco	*A* † *88.00*	*88.00*	*78.00*	*74.00*	*74.00*	*72.00*	*81.00*	*82.50*	*83.00*
Seattle	† *77.50g*	*77.50g*	*77.50g*	*77.50g*	*77.50g*	*77.50g*	*77.50g*	*77.50g*	*77.50g*

	LONG LEAF Y. P.		PLYWOOD	
	Merchantable grade up to 20 ft.		Rail freight increment (See note for base price)	
	2x12 Rgh	12x12 Rgh	¾"	¾"
Atlanta			$22.32	$27.24
Baltimore	$148.00	$148.00	25.92*	31.60*
Birmingham	115.50	155.50	21.78	26.58
Boston			25.92*	31.60*
Chicago	134.00	134.00	22.45*	27.37*
Cincinnati	145.00	145.00	25.00*	30.48*
Cleveland			25.37*	30.93*
Dallas	108.00	98.00	18.72	22.80
Denver			13.92	16.98
Detroit			25.00*	30.48*
Kansas City			16.56	20.16
Los Angeles			16.61*ab*	20.25*ab*
Minneapolis			19.89*	24.25*
Montreal				
New Orleans	148.00	140.00	18.72	22.80
New York	210/240	210/240	25.92*	31.60*
New York	190.00	190.00		
Philadelphia	200/210	200/210	25.92*	31.60*
Pittsburgh	100/120	115/125	25.92*	31.60*
St. Louis			18.72	22.80
San Francisco			12.22*a*	14.91*a*

† F.o.b. mill. * F.o.b. city, CL. out of yard. ** F.o.b. city, CL, direct mill shipment. † Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd.

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* *a* Spruce *b* Tax exempt. *c* 5M lots. *d* 8–12 ft. lengths. *e* 8–16 ft. lengths. *f* 18 ft. or under. *g* No. 1 common. *i* 8 ft. lengths. *k* No. 3 common; *l* 8–10 ft. lengths. *n* ½ #1, ½ #2 & ½ #3.

A Rail freight rate from Northwest mills to San Francisco are $11.50 to $15.00 per M ft bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures.

PLYWOOD: Plyform grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on 1". $176.00; on ¾". $201.00. Exterior plyform ¾" $196.00, ½" $223.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. *a* Lower rate by water shipment. *b* 50,000 lb. minimum.

* Incl. new freight rates. Rates for other cities not avail. as we go to press.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS: Discounts from jobbers list, Feb. 1, 1950*a* — Single or Double Thickness, A quality	WINDOW GLASS: B quality	EXPLOSIVES: Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	79%	80%	$0.2315
Baltimore	76%*d*	78%*d*	.2315
Birmingham	83%	83%	.1790
Boston	79–10%	79–10%	.2315
Chicago	78%	78%	.2315
Cincinnati	78%	78%	.2315
Cleveland	78–10–10%	78–10–10%	.2715
Dallas	75%	75%	.2390
Denver	81–5%	81–5%	.2365
Detroit	78–10–10%	78–10–10%	.2315
Kansas City	80–10%	80–10%	.2365
Los Angeles	75%	80%	.2340
Minneapolis	78–10%	78–10%	.2365
Montreal	40–5%*bc*	40–10–5%*b*	21.60*bs*
New Orleans	78%	77%	.2365
New York	82–10%	82–10%	.3975*g*
Philadelphia	78%	82%	.2315
Pittsburgh	82%	82%	.2040
St. Louis	80–10%	80–10%	.2365
San Francisco	70%	70%	.2315
Seattle	75%	78%	.2340

Price of 60% Ammonia Gelatin is $0.0125 per lb. higher than 40%

Glass; *a* Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b* Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. *c* Single thickness. *d* Discount 6/15/52.

Explosives; * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g* In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. *h* F.o.b. city per 100 lb. forcite, 40% Forcite 60%, $23.35. *i* F.o.b. Beloeil (near Montreal).

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.179	$0.2115	$0.2315
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.184 – 1915	.2165– 224	.2365– 244
Rocky Mtn. States	.184 – 1965	.2165– 224	.2365– 249
Pacific N. W. States	.1815– 194	.214 – 2265	.234 – 2465
Pacific S. W. States	.179 – .1865	.2115– 214	.2315–.2365

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail: Pine*	By Rail: Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	....
12-in. — 2-ft. from butt	6-in.	50 to 59-ft.	.54	....
12-in. — 2-ft. from butt	6-in.	60 to 69-ft.	.58	....
12-in. — 2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in. — 3-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in. — 2-ft. from butt	6-in.	50 to 69-ft.	.50/.68	....
14-in. — 2-ft. from butt	6-in.	70 to 79-ft.	.78/.83	.93
14-in. — 2-ft. from butt	5-in.	80 to 85-ft.	.83/.93	.94
14-in. — 2-ft. from butt	5-in.	85 to 89-ft.	....	1.00
14-in. — 2-ft. from butt	5-in.	90 to 100-ft.	....	1.02

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston	Oak	‡	....	....	....
	Pine	‡	....	....	....
New York	S. L. San Pine	$2.55	$4.35	$3.45	$5.45
	Mixed Oak	3.10	4.65	3.70	5.95
Birmingham	Hardwood	2.40	3.88*a*	2.85	4.58*a*
Chicago	Red Oak	....	4.00*a*	....	5.00*a*
Los Angeles	Douglas Fir	....	....	....	....
	Redwood	....	....	....	....
Philadelphia	Red Oak	2.60	3.95	3.45	5.10
St. Louis	White Oak	3.04		3.85	
	Red Oak	2.94	3.60*a*	3.67	4.68*a*
	San Pine or Cypress	3.41*a*		4.44	
San Francisco	Douglas Fir	2.20*e*	3.25*af*	2.92*bf*	4.30*eaf*
Montreal	Birch or Maple	*h*	*h*	*h*	*h*

Tr.— Treated; Untr.— Untreated. *a* Creosoted. *b* 7" x 9" x 8'. *c* Empty cell. *e* Green. *f* F.o.b. cars. *h* No constant price available. ‡ Not available.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb	$6.00
Chlorine cylinders, liquid, per lb. f.o.b. works	.0875
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	25.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	2.20
Soda ash, 58%, in paper bags, per 100 lb. dense	1.60
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.65
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	8.95

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION — SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK— Per M. in quantity Common backing	Straight hard	LIME— Per ton, In paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized or lump
Atlanta	$195.00	$207.50	$247.50	$327.00	$342.00	$381.50	$27.38	$27.38	$19.00	$17.50	$17.50
Baltimore	183.00	195.00	366.00	415.00	541.00	618.00	36.00*k*	41.00*k*	30.00	21.00	....
Birmingham	118.00*p*	128.00*p*	236.00*p*	283.00*p*	.....	.....	23.50*ff*	28.50*gg*	26.37	17.10	*
Boston	196.00†	209.00†	392.00†	383.25†	.....	.....	34.50*p*	37.50*p*	30.00†	28.00†	*
Chicago	135.00	145.00	280.00	.....	.....	.....	23.00	25.00	30.80	26.00	....
Cincinnati	185.00*j*	195.00*j*	340.00*jdd*	.....	.....	.....	34.50*j*	46.00*j*	26.37*j*	24.62*j*	.....
Cleveland	172.00**	183.00**	.....	.....	.....	.....	32.00	32.00	25.50	23.50	31.00*ee*
Dallas	.....	118.00	.....	.....	.....	.....	19.75	35.25	32.00	21.80	.....
Denver	.....	.....	.....	.....	.....	.....	34.00	40.00	34.80*bb*	28.00*bb*	34.00*bb*
Detroit	127.75	136.25	255.55	.....	317.25	362.60	34.90*cc*	33.30*cc*	32.00	30.00	.....
Kansas City	115.50	122.50	245.00	245.00	303.50	367.00	26.00	26.00	30.50	24.50	27.00
Los Angeles	*	*	*	*	*	*	24.50§	.....	34.00	34.00	35.00*
Minneapolis	171.50*p*	192.50*p*	386.00*p*	192.50*ww*	.....	.....	32.00*vp*	36.00	37.00*bbe*	28.00*bbe*	38.00*bbde*
Montreal	150.00*qq*	162.50*uu*	300.00*uu*	.....	.....	.....	31.00	41.50	34.80	32.50	24.60*u*
New Orleans	170.00	170.00	310.00	380.00	.....	.....	31.00	.....	.....	28.00	28.00
New York	138.70*h*	147.90*h*	203.40*eh*	221.90*hn*	.....	.....	35.00	.....	36.00	32.00	....
Philadelphia	126.30	134.80	252.60	302.74	361.33	.....	32.00	42.00	36.00	23.00	....
Pittsburgh	112.00	117.00	189.00	216.00	279.00	317.00	36.00	46.00*y*	25.00	23.00	2.97*m*
St. Louis	138.00*cc*	158.50*cc*	313.00*cc*	.....	351.00*ee*	.....	40.00*sl*	36.25*s*	40.00*aa*	35.00*aa*	1.10*aaspes*
San Francisco	156.85*s*	177.10*s*	235.30*dds*	.....	.....	.....	37.00	.....	26.60	26.60	2.65*m*
Seattle	175.00*cc*	190.00*cc*	.....	190.00*ccw*	.....	.....	39.00*s*	49.00*s*	37.50*shh*	1.45*t*	3.90*mh*

† F.o.b. yard Roxbury. *a* Smooth. *b* Per 50 lb. bags. *c* 6 x 12 x 12 in.-3 cell. *d* Pulverized hot. *e* 5%, 10th following month. *g* 5¼ x 8 x 12. *h* F.o.b. trucks, job site N.Y.C. *j* Truck load or over. *k* $1.00 discount *l* Red face. *m* Per bbl., 180 lb. *n* 7½ x 7½ x 12. Speed title. *p* Truck lots. *q* Provincial and Municipal tax extra. *r* Not used because of earthquake danger. *s* 2% discount for cash. *t* 5¼ x 8 x 11½. *u* Tax exempt. *v* Sand lime. *w* 5 x 8 x 12. *y* Stacked. *z* Pebble lime price per 80 lb. sack. *aa* Price per sack. Lime not sold per ton. *bb* LCL. *cc* Truck delivery. *dd* 6 x 12 x 12. *ee* Pebble lime. *ff* 80% common. *gg* Select. *hh* LCL. § F.o.b. yard. *ii* Per 60 lb. sack, no incr., ton price no longer quoted. ** Warehouse delivery. * F.o.b. Stockton.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl. Dry *a*	WHITE LEAD Per 100 lb. in 100 lb. cases in oil *w*	READY-MIXED PAINT Per gal., drums Graphite *b*	Aluminum *c*	Ferric Oxide *d*	ROOFING SUPPLIES Carload lots f.o.b. factory Rolls, slate surfaced, 85-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$19.00	$20.175	$1.75	$2.70	$1.65	$2.06‡	$2.06‡	$2.06‡	$1.00‡	$36.00‡
Baltimore	18.75	28.80	2.65	4.10	3.22	2.50	4.17	4.22	.42	37.00
Birmingham	19.00	29.175	3.90	3.40	....	2.80	2.75	2.75	....	40.50*ee*
Boston	18.75	28.80	....	....	....	2.67*qq*	2.56*qq*	2.56*qq*	.42*q*	42.00*q*
Chicago	18.75	28.80	....	....	....	12.73‡*u*	3.04‡*o*	3.04‡*o*	38.00‡*bbr*	43.00‡
Cincinnati	18.75	28.80	....	....	....	2.50	2.50	2.50	.42*y*	42.36
Cleveland	18.75	28.80	2.50*pqqA*	3.40*qqB*	2.78*qqC*	2.50*q*	2.50*o*	2.50*o*	.39*y*	43.20*hh*
Dallas	19.00	29.55	....	4.05	....	3.50*q*"	3.75*o*	4.35*o*	.36	46.00
Denver	19.25	29.30	3.07	5.15	2.87	3.25*o*	2.40*o*	2.40*o*	.43*ff*	42.00
Detroit	18.75	28.80	2.35	3.40	2.50	2.50	2.30*f*	2.30	.51	40.00
Kansas City	18.75	28.92	....	2.71*qs*	2.65	2.50	2.50*o*	2.50*o*	.313*	48.00
Los Angeles	18.75	29.05	3.30*	4.50*	4.20*	2.97*	2.01*eh*	*l*	.44*	*l*
Minneapolis	18.75	28.55-28.92	....	....	....	2.40*dd*	2.50*hidd*	2.50*hidd*	.36*idd*	37.00*r*
Montreal	....	20.70	2.95*fff*	4.05*fff*	3.35*fff*	4.82‡	3.65*tf*	3.65*tf*	1.24*kf*	3.78*kt*
New York	18.75	28.80	....	....	....	2.50‡	2.50*o*	2.50*o*	.36*z*	37.00*
Philadelphia	18.75	28.80	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	18.75	28.80	2.65	2.65	3.15	2.50	2.87*o*	2.87*o*	.40	42.00
St. Louis	18.75	28.80	....	....	....	2.50	2.50*h*"	2.50*h*	.33*y*	38.00
San Francisco	18.75	29.05	2.40	....	3.40	2.95	4.00*aa*	....	.49	....
Seattle	18.75	29.30	2.96*m*	2.80*m*	....	3.58*mqcc*"	3.05*hmcc*	....	.59*mcc*	52.00*mc*

‡ Delivered. Note: Red lead in oil 50¢ higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes. *b* U. S. War Dept. Spec. 5-49A. *c* ASTM Spec. D266-31. *d* 80% minimum ferric oxide. *e* 15 lb. *f* Per 432 sq. ft. *g* F.o.b. yard Roxbury. *h* Per roll, 65 lb. *i* Net carload lot prices; Minneapolis and vicinity. *j* Asphalt pitch. *k* Per cwt. *l* Not used. *m* 1% discount for cash. *n* F.o.b. city. *o* Per 60-lb. *p* 6-drum. *q* Per 90-lb. roll. *r* F.o.b. factory Chicago. *s* 466 Med. *t* Federal tax included. *u* Per 90 lb. square. *v* Per ton. *w* Price to large paint contractors is $1.25 less. *x* Mineral surfaced. *y* 55-gallon container. *z* Drums. *aa* Approximate cost per 100 lbs. *bb* Roofers coating and cement. Price per ton. *cc* LCL, truck delivery. *dd* 2% cash discount. *ee* Asphalt, in 100 lb. package. *ff* 5-gal. drums. *gg* F.o.b. factory. *hh* Incl. freight. *A* TTP 22. *B* TTA 168A. *C* TTP 31A. *D* Std Black. *E* Ready-mixed. *F* Over 80% ferric oxide. * Aver. wt. approx. 500 lbs.

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	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Common Labor Heavy Const.
Atlanta	$2.75	$2.20	$2.335	$2.25	$2.75	$2.60	$2.75	$1.05	$1.05
Baltimore	3.20*i*	2.58	3.125*i*	2.85*i* 3.00	2.75	2.75	2.80	1.565*i*	1.565*i*
Birmingham	2.75	2.24	2.50	2.16	2.52	2.75	2.65	1.225	1.325
Boston	3.06*	2.625	2.82	3.00	3.05	2.80	2.895*f*	1.99*	1.99*
Chicago	3.25*k*	2.95	2.80	2.80	3.215*n*	3.222*f*	3.00	2.20*m*	2.20*m*
Cincinnati	2.90	2.625	2.665	1.825 2.85	2.75	2.60	2.80	1.65	1.65
Cleveland	3.00	3.075*s*	3.075	3.00	3.075	3.075	2.97	2.35	2.35
Dallas	3.4375	2.3375	2.50	2.475	3.437	2.75	2.6125	1.20	1.35
Denver	3.00*	2.35*	2.50	2.48*	3.30*	2.90	2.82	1.575	1.575
Detroit	3.08	2.83	3.08*m*	2.90	3.005*l*	3.05	2.90*m*	2.08	2.08
Kansas City	3.50	2.55	2.68	2.365 2.61	3.175	2.70	2.75	1.88	1.88
Los Angeles	3.00*	2.57*	2.70	2.30*	3.125*	2.75	2.625*	1.75*	1.75*
Minneapolis	2.90	2.40*r*	2.57	2.75	2.75	2.71*n*	2.70	1.67	1.67
New Orleans	2.85	2.22	2.60	2.50	2.575	2.65	2.625	1.225	1.225
New York	3.548*r*	3.096*o*	3.348*o*	3.348*o*	3.80*t*	3.597*as*	3.286*bj*	1.90	1.90
Philadelphia	3.46*h*	2.90	3.32*t*	1.55 2.90**	3.325*	3.298*	3.29*x*	1.75	2.05
Pittsburgh	3.25	2.75	2.75	2.825	2.75	2.75	2.80	1.90	1.90
St. Louis	3.55*c*	2.90*h*	2.90	2.97*x*	3.00	2.887*c*	2.75	1.97*x*	1.97*x*
San Francisco	3.256	2.60	2.75	2.56	3.125*	3.00	2.75	1.85	1.85
Seattle	3.30	2.58	2.78	2.64	3.00	2.65	2.75	2.18	2.14
Montreal*	1.90	1.70	1.80	1.90	1.90	1.80	1.85	1.20	1.20

a 6 hr. day. *b* 7 hr. day. *c* Incl. 3% vacation stamp fund for bricklayers; 4% for electricians plus 1¢ N.P. *d* Incl. 10¢ H. & W. F. *e* Incl. 6¢ H. & W. F. *f* Incl. 6% W. F. *g* Incl. 11¢ W. F. * Cost of living bonus now included in basic wage. Includes 5¢ per hr. tool replacement. *h* $2.45 homes and housing + 5¢ vacation fund. *i* Incl. 3½% welfare. Incl. 9¢/hr. welfare. *k* Incl. 7½¢/hr. welfare fund. *l* Incl. 4% vacation fund. *m* Incl. 5¢/hr. welfare ins. fund. *n* Incl. 6¢/hr. welfare fund. *o* Incl. 3% welfare fund. *p* Incl. 5% welfare fund and 3% pension fund. *r* Incl. 3% welfare fund and 20¢ pension fund. *s* Incl. 5% welfare and pension fund and 4% vacation fund. *t* Incl. 7½¢ W. & H. F. *u* Incl. 1½% welfare fund. *v* Incl. 10¢ welfare fund. *w* Negotiating. *x* Await WSB appr. *A* Incl. 10¢ W. F., 10¢ P. F. & 10¢ Vac. F.

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In Pesos, F.o.b. City		May '52	June '52
Common Wages—Building (8 hr. day)	av. per hr.	.83*	.83*
Common Wages—Heavy Const. (8 hr. day)	av. per hr.	.93*	.93*
Skilled Labor Wages			
Carpenters (8 hr. day)	av. per hr.	2.25*	2.25*
Bricklayers (8 hr. day)	av. per hr.	2.25*	2.25*
Struct. Iron Workers (8 hr. day)	av. per hr.	1.50*	1.50*
Struct. Steel Shapes			
3"-15" x 12 meters	per metric ton	1,111.01	1193.63
Reinf. Steel, Corr. Rods			
¼" x 11 meters	per ton	1,261.51	1356.17
⅜" x 11 meters	per ton	1,251.13	1344.66
½" x 11 meters	per ton	1,240.75	1333.75
⅝" x 11 meters	per ton	1,230.37	1322.54
¾" x 11 meters	per ton	1,230.37	1322.54
1" x 11 meters	per ton	1,230.37	1322.54
Gravel truck load of 3½ cu. meters			
Blue Gravel	per tr. load	45.00	55.00
Rose Gravel	per tr. load	43.00	45.00
Cement, Std. Port. (Tolteca)	per ton	160.00	160.00
Lumber			
Mex. Sacred Fir (OYAMEL)	per M ft.	800.00	800.00
1st Class Pine	per M ft.	1200.00	1200.00
2nd Class Pine	per M ft.	980.00	980.00

* Increase by 1/6th—work 6 days, paid for 7 days.

ENR Skilled Average: (Bricklayers, Carpenters, Iron-workers): $2.849 **ENR Common Average:** $1.755

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(Continued on page 90)

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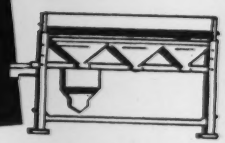

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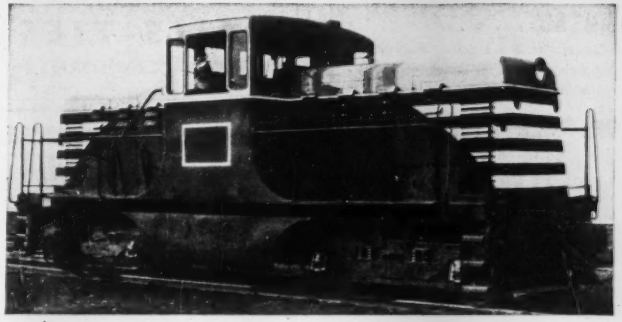

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24" d. Corrugated Galvanized in 30' lengths—approximately 5500'. Used once for Ventilation Duct in 12' d. Tunnel — REASONABLE & stored in Cleveland, Ohio.

Contact: **THE KALILL CO.**
4161 W. 150th St., Cleveland 11, Ohio
Phone: CL-1-3848

OFFICIAL PROPOSALS

Bids: July 22, 1952

Traveling Cranes

CONTRACT 410

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 10:00 A.M., Eastern Standard Time, on Tuesday, July 22, 1952, for Contract 410, for furnishing, testing and delivering 15-ton and 3-ton electric traveling cranes and appurtenances for installation in the Neversink and East Delaware intake chambers and the Downsville release water chamber of the Delaware system, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of fifteen thousand dollars ($15,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

Bids: July 10, 1952

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., Eastern Daylight Saving Time, on July 10, 1952 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON THE NEW YORK STATE THRUWAY, HUDSON SECTION, SUBDIVISION 8, SUFFERN TO ROUTE 303, ROCKLAND COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-38.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.

(b) J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.

(c) Charles Schaefer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $56,250.00.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $2,813.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

B. D. TALLAMY
Superintendent of Public Works

Bids: August 7, 1952

4200'—24" Steel Sewage Force Main
4200'—36" Reinforced Concrete Effluent Sewer
And Miscellaneous Appurtenant Structures

Sealed bids will be received by the Board of County Supervisors of Fairfax County, Virginia, at the Office of Sanitary Engineer, County of Fairfax, 114 E. Main Street, Fairfax, Virginia, until 2:00 O'CLOCK P.M., E.D.S.T., THURSDAY, AUGUST 7, 1952, for the installation of approximately 4200' of 24" Steel Sewage Force Main, 4200' of 36" Reinforced Concrete Effluent Sewer and Miscellaneous Appurtenant Structures (the force main and effluent sewer pipe and couplings and certain other materials are to be furnished by the Owner, without cost to the Contractor, at or near the project site), which has been designated as "Contract No. 8", and promptly thereafter they will be publicly opened and read in the Board of County Supervisors' Room, County Office Building, Fairfax, Virginia.

Plans, specifications and contract documents may be examined at the Office of Sanitary Engineer, and copies thereof may be obtained from Massey Engineers, Consultants, Ford Building, Fairfax, Virginia, upon payment of a deposit of $15.00 in cash for each set, which sum will be refunded upon the return of such documents in good condition within ten (10) days after the bid date. Bids must be submitted on the forms supplied for this purpose and in strict accordance with the instructions therefor. Each bidder will be required to show evidence of possession of a certificate of registration as a contractor in the Commonwealth of Virginia before his bid will be considered.

Each bid must be accompanied by a bid bond or certified check made payable to the County of Fairfax, Virginia, in the amount of at least five per centum (5%) of the total amount of the bid. The successful bidder will be required to furnish a performance and maintenance bond in a penal sum equal to the full contract price.

The time for completion of the contract is one hundred and eighty (180) consecutive calendar days and liquidated damages in the amount of $25.00 per day will be assessed in event of delay or default in the completion of the contract.

No bid may be withdrawn for a period of thirty (30) days after the actual opening thereof and the right is reserved to waive any informality therein and to reject any or all bids.

James J. Corbalis, Jr.
Sanitary Engineer, County of Fairfax
Fairfax, Virginia

Bids: July 25, 1952

Resurface Terminal Street

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK, N. J.
CONTRACT O AND M 162

Proposal #849

Sealed proposals for furnishing all labor, material and equipment to Resurface Terminal Street, Port Newark, New Jersey, will be received at the office of the Director of Purchase of The Port of New York Authority, Room 1402, 111 8th Ave., New York 11, until 11:00 a.m. (E.D.S.T.) on Friday, July 25, 1952, at which time and place proposals will be publicly opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Service, The Port of New York Authority, Room 1402, 111 8th Ave., New York 11, and copies will be furnished upon deposit of $10 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt in duplicate will be issued. The pink copy of the receipt should then be delivered to the Department of Purchase and Administrative Services, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, July 10, 1952

Bids: July 31, 1952

Fumigation Building

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
FUMIGATION BUILDING
CONTRACT PN-220.001

Sealed proposals for the construction of a fumigation building, including paving and utilities therefor, at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 11:00 A.M. Thursday, July 31, 1952, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials, Room 1110, and copies will be furnished upon deposit of $25. per set. Deposit to be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt should then be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, July 10, 1952

Bids: July 22, 1952

Construction of Concrete Cylinder Pipe Transmission Main and Appurtenances

CITY OF BETHLEHEM,
PENNSYLVANIA
Contract No. 1

Sealed proposals, addressed to the City Council of Bethlehem, Pennsylvania, for construction of 36-inch Reinforced Concrete Cylinder Transmission Main and Appurtenances, will be received at the office of the City Clerk, 53 East Broad Street, Bethlehem, Pennsylvania, until 9:30 A.M. Eastern Daylight Saving Time, (8:30 A.M., Eastern Standard Time) on July 22, 1952, and will be publicly opened and read aloud at a meeting of the City Council in the Council Chambers, City Hall, immediately thereafter.

The work under this contract will consist of the construction of a 36-inch concrete cylinder pipe transmission main approximately 41,600 feet in length, including all appurtenant work and facilities from an existing 34-inch reinforced concrete main at the intersection of Dewberry and Madison Avenues in the City of Bethlehem to a connection with the existing 30-inch reinforced concrete water transmission main where it crosses State Highway Route 329 near Howertown, Northampton County, Pennsylvania.

Plans and specifications, Form of Contract and Bidding Blanks are on file and open to public inspection at the office of the Bureau of Water, 29 East Broad Street, Bethlehem, Pennsylvania, or at the office of Morris Knowles Incorporated, Engineers, 1312 Park Building, Pittsburgh, Pennsylvania. The plans and specifications may be obtained at either of said offices for use in preparing a bid, upon deposit of Twenty-five Dollars ($25.00) for each set. If the plans and specifications are returned in good condition within a period of two weeks after the date set for the open of bids, the full amount of the deposit will be returned to each bidder. If the plans and specifications are not returned within the time stated, the entire amount of the deposit will be forfeited.

No bid may be withdrawn during a period of thirty (30) days after the scheduled closing time for receipt of bids.

The right to waive any informality in any bid; to accept any bid; or to reject any or all bids, is reserved by the Council of Bethlehem, Pennsylvania.

OFFICIAL PROPOSALS

Each proposal shall be accompanied by a certified check, bank treasurer's check, or cashier's check, in an amount not less than five per cent (5%) of the total of the bid submitted, in the form and subject to the conditions provided in the Information for Bidders. The bidder to whom a Contract is awarded will be required to furnish, for the faithful performance of the work thereunder, an approved Surety Company Performance Bond in an amount equal to 100 per cent (100%) of the total of the bid submitted, and a separate approved Surety Company Labor and Materialmen's Bond in an amount equal to 50 per cent (50%) of the total of the bid submitted.

CITY OF BETHLEHEM,
PENNSYLVANIA
Bertram L. Nagle, City Clerk
MORRIS KNOWLES
INCORPORATED
Engineers

Bids: July 25, 1952

THE PORT OF NEW YORK AUTHORITY
RAILROAD RAILS, FROGS, SWITCHES
Proposal #848

Sealed proposals for the purchase of manganese Railroad Frogs, Railroad Rails, and Switches to be delivered to Port Newark, New Jersey, will be received at the office of the Director of Purchase of The Port of New York Authority, Room 1402, 111 8th Ave., New York 11, until 11:00 a.m. (E.D.S.T.), Friday, July 25, 1952, at which time and place proposals will be publicly opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK
AUTHORITY
Howard S. Cullman, Chairman

New York, July 10, 1952

Bids: July 24, 1952

Installation of Oil Fired Heating Boiler and Unit Heaters

THE PORT OF NEW YORK
AUTHORITY
GOETHALS BRIDGE
STATEN ISLAND, N. Y.
CONTRACT O AND M—159
Proposal No. 846

Sealed proposals for the installation of a new oil fired boiler and unit heaters at the Goethals Bridge Garage, Staten Island, New York, will be received at the office of the Director of Purchase of The Port of New York Authority, Room 1402, 111 8th Ave., New York 11, until 11:00 a.m. (E.D.S.T.) Thursday, July 24, 1952, at which time and place proposals will be publicly opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK
AUTHORITY
Howard S. Cullman, Chairman

New York, July 10, 1952

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-3749) will be received at Denver, Colorado, until July 31, 1952, for furnishing six 10.5-foot by 12.25-foot fixed-wheel gates including chains and rest beams for Nimbus Power Plant, Central Valley Project, California. Delivery is desired within 360 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado.

Department of Commerce, Bureau of Public Roads, June 27, 1952. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., D.S.T., JULY 25, 1952, for Project 1101-1E4, Baltimore-Washington Parkway, Prince Georges County, Maryland, 4.205 miles Grading and Drainage from ½ mile north of Good Luck Road to East-West Highway. The approximate quantities of the more important items are: 108 acres Clearing and Grubbing, 856,700 cu. yd. Excavation, 30,000 cu.yd. Borrow for Topping, 2,450 cu.d. Cement Concrete, 17,485 lin. ft. Concrete Culvert Pipe, and 2,400 units of Seeding. Minimum wage rates have been fixed as required by law. Plans, specifications, and proposal forms are available upon request at the address given above. H. J. Spelman, Division Engineer.

OFFICIAL PROPOSALS

Bids: July 24, 1952

N. Y. State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on Thursday, July 24, 1952 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1 G. L. Nickerson, District Engineer, 353 Broadway, Albany, New York				
Greene	FARC 52-74	Tannersville-Haines Falls, S. H. 1630 Project F-1104(1)	3.37	Asp. Conc. Ty. 1A, Opt. Reinf. Conc. Slab, Br. 24'	$10,000 Plans $10	$180,000
Schenectady	FARC 52-75	Scotia-Saratoga County Line, Pt. 2 S. H. 1609, Project S-758(2)	4.14	Asp. Conc. Ty. 1A, Opt.	$8,000 Plans $10	$142,000
		DISTRICT No. 3 Wm. Robinson, District Engineer, 301 East Water Street, Syracuse, New York				
Tompkins	FASS 52-10	Peruville Relocation C. R. 107 Project S-283(1)	1.85	Bit. Mac. Opt. Rd. Mix	$7,000 Plans $10	$130,000
		DISTRICT No. 4 J. P. Larsen, District Engineer, Barge Canal Terminal, Rochester, New York				
Ontario	FAC 52-8P FAC 52-9 FAGC 52-10	Geneva City: Lake Front Arterial Pt. 1 & Pt. 1A U & UG-452(6)	0.98	9" Cem. Conc. Pavt. 48'-58' Wide = 0.85 Mi. Asp. Conc. Ty. 1A, Opt. = 0.11 Mi. Misc. Work = 0.02 Mi. R.R. Sep. 5 Sp. Alpha I-Beam 326.08' Hy. Sep. Rigid Frame Arch 70'	$60,000 Plans $25	$1,103,000
		DISTRICT No. 5 C. R. Waters, District Engineer, 65 Court Street, Buffalo, New York				
Erie	FAC 52-7	City of Buffalo: Humboldt Parkway Extension (Azassiz Circle to Delaware Ave.) Project U-1087(2)	1.66	Asp. Conc. Ty. 2A = 0.92 Mi. (Pkwy.) Asp. Conc. Ty. 2A = 0.67 Mi. (Ave.) Misc. Work = 0.07 Mi. (Pkwy.)	$40,000 Plans $15	$721,000
Erie	FARC 52-72	Alden Village, S. H. 1065 Alden-Town Line, S. H. 644 Project F-652(6)	1.95	Asp. Conc. Ty. 1A, Opt. = 1.92 Mi. Misc. Work = 0.03 Mi.	$9,000 Plans $10	$159,000
		DISTRICT No. 7 C. C. Cassel, District Engineer, 444 Van Duzee St., Watertown, New York				
Jefferson	FAC 52-4 FAGC 52-5	City of Watertown: Arsenal St. U & UG-577(4)	1.55	Asp. Conc. Ty. 2A R.R. Sep. 4 Sp. Alpha I-Beam 276'	$70,000 Plans $50	$1,269,000
		DISTRICT No. 8 J. S. Bixby, District Engineer, Pleasant Valley Rd., Poughkeepsie, New York				
Putnam, Dutchess & Westchester	TSP 52-1R	Taconic State Parkway Incl. Bear Mt. Pkwy. Spur	5.67	Asp. Conc. Ty. 1A, Opt.	$8,000 Plans $10	$145,000
Putnam	FARC 52-71	Croton Falls-Brewster, Pt. 2 S. H. 5438 Brewster Village, S. H. 5098 Project F-341(3); F-643(13)	1.81	Asp. Conc. Ty. 1A, Opt.	$1,000 Plans $10	$75,000
		DISTRICT No. 9 F. W. Donovan, District Engineer, 71 Frederick St., Binghamton, New York				
Broome	FASH 52-9	Johnson City-Route 17 Connection FASH 50-13 (Johnson City Bridge Project Contract No. 3) Proj. U-1092(2)	0.37	Superstructure for 8 Span Alpha Plate Girder 1400' Alpha I-Beam 43.84' Span 2 Span Alpha I-Beam 100'	$86,000 Plans $15	$1,587,135
		DISTRICT No. 10 J. J. Darcy, District Engineer, Little E. Neck Rd. & Montauk Hwy., Babylon, Long Island, New York				
Kings	FABQE 52-1	Brooklyn-Queens Expressway (Cont. 16) Project U-1066(9)	0.80	Demolition of Bldgs.	$30,000 Plans $10	$510,000

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

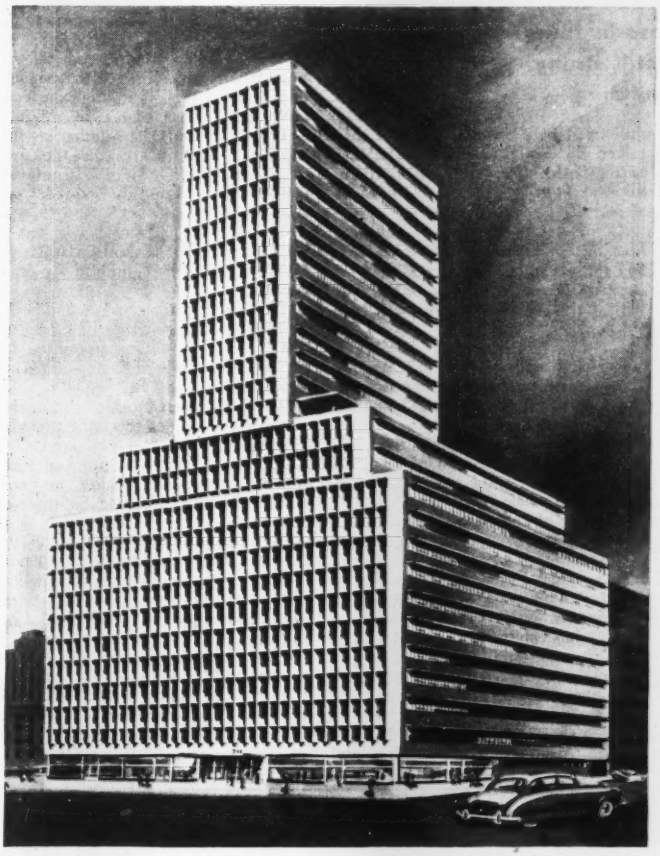
When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

U. S. Government

Department of Commerce, Bureau of Public Roads, June 26, 1952. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., D.S.T. JULY 22, 1952, for Project 1D2, Baltimore-Washington Parkway, Prince Georges County, Maryland. Bridge under Branchville-Glenn Dale Road. Length 0.052 mile. The approximate quantities of the more important items are: 11,500 cu. yd. Excavation, 2,120 cu.yd. Cement Concrete, 300,000 lb. Reinforcing Steel, 187 cu. yd. Stone Masonry, and 5,000 lin.ft. Treated Timber Piling. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the address given above. H. J. Spelman, Division Engineer.



THE SUNNY SIDE of the street won't faze this proposed 28-story Manhattan office building. It will have "built-in" sunshades. Estimated cost: $20 million.

New York City to get building with eyebrows

A $20-million, 28-story, air-conditioned office building is planned for the East Side of midtown Manhattan in New York City, by William Kaufman, builder, on a 40,000-sq ft site.

The building is being designed by William Lescaze, architect, and will use fully "built-in" shade to lessen the strain which sunheat exerts on an air-conditioning system.

The structure, which will contain a total of approximately 665,410 sq ft, will front 200 ft on Third Avenue, 230 ft on 44th Street and 155 ft on 45th Street, one block east of the Lexington Avenue entrance of Grand Central Terminal.

To keep the building in the shade, the architect devised 3'9" wide, fixed, vertical sunshades, set at a 65 degree angle at each of the close-set windows, on the west side and 2-ft wide, horizontal hoods over all windows on the south facade. The shades and hoods will be of porcelain enamel.

In addition, the building will overhang street floor stores 18 inches and tower will cantilever on one side 4'6".

Price order revised for used machinery

The Office of Price Stabilization has issued a revised CPR 105 which revamps the methods of determining ceiling prices on used construction machinery and equipment. The new order became effective June 30.

Harry J. Hush, president of the Associated Equipment Distributors, said the new order disposes of an 18-month-old bone of contention between OPS and industry men who insisted on the need for a realistic, tailored price regulation which would embody trade practices of the machinery and equipment distributors.

One of the most important changes is the inclusion in the base price of freight charges from the factory to the location of the used machine.

Originally, this part of the delivered cost was not included, but industry men pointed out to OPS that the delivered cost, including freight has customarily been a factor in pricing used construction machinery and equipment.

The revision also permits a higher than ceiling price trade-in allowance for used construction machinery and equipment since it in effect means a reduction in the price of the other item being purchased, OPS said.

Revision 1 to CPR 105 also changes the method of arriving at the base price. The seller has four alternatives, but must take the first one which applies.

A major change came in the terms and conditions of sale.

Previously, OPS required the seller to deduct dismantling and loading charges from the ceiling price. This was contrary to trade practice. Historically, the buyer has always paid the cost of dismantling and loading the equipment or machinery. OPS revised this in the new order.

"Under some circumstances, the cost of dismantling and loading could run 50% or more of the cost of the equipment," Hush said.

OPS also followed industry recommendations in permitting addition to the ceiling price of charges for extension of credit, and simplified the record keeping and invoicing.

OPS no longer requires the distributor to test factory rebuilt and guaranteed machines prior to sale.

And guarantees on factory rebuilt equipment now run for 45 days, not 90 days as required previously.

Other changes were also made at the suggestion of the industry men.

June contracts 11% ahead of 1951

- **Industrial building leads in June**
- **Private mass housing still strong**
- **Schools boost public building**

Heavy construction volume in June was higher than 1951 for the third consecutive month.

Contract awards, as reported to ENGINEERING NEWS-RECORD, added up to $1,141 million in June, 11% more than in June, 1951.

With half of 1952 already on the record books, construction volume, as measured by ENR, is only 7% under the record volume of last year.

Depending on the length and effects of the steel strike, the next six months should see construction close the gap between 1951 and 1952 even more.

Industrial building regained the lead from private mass housing in June with a total of $243 million in contract awards, compared to $229 million allocated to the private housing classification.

Public building, other than housing, reached a total of $212 million in contract awards for June. This was partly due to the high volume of school construction.

Hospitals and public administration buildings are also in this category which continues to show substantial month-to-month gains since the low in February.

Highway construction, with $146 million in June contract awards, maintained the fast pace of the preceding two months. For the year to date, highway contracts are 35% ahead of 1951.

Commercial building, excluding housing, declined in June, with only $57 million in contracts. Public housing had its poorest month of the year with only $20 million in new contracts.

• **Regional analysis**—The area west of the Mississippi took the honors again in June with $341 million in contracts for new construction.

Industrial building accounted for $133 million in the west of the Mississippi total. Texas alone had $91 million in awards, while Arkansas took most of the remainder with $35 million.

The states west of the Mississippi also led in volume of highway contracts with $45 million and the region was second only to the Middle Atlantic in volume of private mass housing.

Total contract award volume for the area west of the Mississippi for the first six months of this year is 27% higher than in 1951.

The Middle Atlantic region and the South were next highest with $222 million and $220 million respectively in total contract awards for June.

The Middle Atlantic led all regions in private housing with $83 million. It was second in highway contracts with more than $32 million. Total 1952 contract volume of the Middle Atlantic states for the first six months was down 4% from the comparable six-month period last year.

The South took the lead in public building other than housing with its figure of nearly $68 million for June contracts.

The South was second in industrial building contracts with a June total of $45 million. Louisiana accounted for $31 million of the industrial building volume.

The South's six-month volume this year was 7% under the same period a year ago.

The Far West had a total of $127 million in contract awards in June, the smallest month since February of this year. Public construction alone accounted for nearly 80% of all the contract award volume in this region.

Total contract volume in the Far West for the first six months was 17% below the figure established for last year.

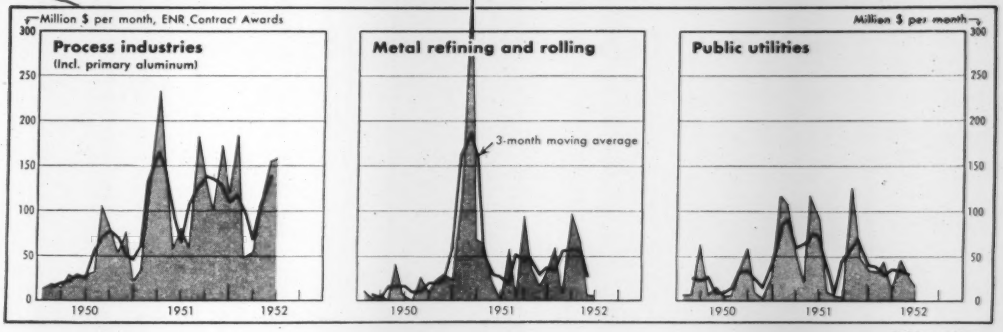
New England reported $56 million in contracts in June, the smallest month since March of this year. But total 1952 volume for the first six months of this year was 30% ahead of 1951.

ENGINEERING CONSTRUCTION CONTRACTS—JUNE, 1952

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $34,000; *other public works,* $60,000; *industrial buildings,* $82,000; *other buildings,* $300,000

Four Weeks—Thousands of Dollars (000 Omitted)

	June, 1952						U. S. Cumulative Six Months		%	Canada
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1952	1951	Change '51 to '52	June 1952
Public Works											
Waterworks	483	2,317	2,344	5,199	3,928	2,948	**17,219**	**117,752**	115,453	+ 2	2,239
Sewerage	2,967	5,584	7,013	6,777	4,186	3,080	**29,607**	**128,179**	164,449	−22	1,118
Bridges	3,597	12,317	7,182	2,387	5,970	7,363	**38,816**	**181,617**	145,930	+24	845
Earthwork and waterways	681	1,943	2,839	2,176	17,057	19,441	**44,137**	**284,271**	273,303	+ 4	1,108
Streets and roads	8,518	32,403	17,476	24,112	45,374	18,605	**146,488**	**740,679**	546,670	+35	9,847
Public buildings, residential	4,496	3,733	8,135	1,285	1,873	849	**20,371**	**436,203**	329,903	+32	1,400
Other public buildings	10,546	34,791	67,507	38,649	27,708	32,984	**212,185**	**945,281**	1,111,744	−15	12,667
Unclassified	2,364	3,744	17,967	3,981	19,783	15,212	**63,051**	**369,985**	405,239	− 9	13,264
Total public	**33,652**	**96,832**	**130,463**	**84,566**	**125,879**	**100,482**	**571,874**	**3,203,967**	**3,092,691**	**+ 4**	**42,488**
Federal government (included in above classifications)	3,372	31,008	68,929	23,247	37,565	32,685	**196,806**	**1,065,220**	**1,154,100**	**− 8**	**14,753**
Private											
Bridges	.....	.....	.....	.....	720	1,900	**2,620**	**12,520**	7,438	+68	.....
Industrial buildings	18,477	18,359	45,260	25,997	132,982	2,210	**243,285**	**1,499,387**	2,374,502	−37	6,485
Com'l. buildings, residential	3,287	83,390	25,441	48,675	57,752	10,353	**228,898**	**1,479,300**	1,024,805	+44	7,344
Other commercial buildings	300	11,942	14,106	13,332	6,136	10,803	**56,619**	**316,838**	347,115	− 9	5,073
Unclassified	155	11,500	4,332	2,535	17,701	1,135	**37,358**	**270,702**	436,378	−38	1,370
Total private	**22,219**	**125,191**	**89,139**	**90,539**	**215,291**	**26,401**	**568,780**	**3,578,747**	**4,190,238**	**−15**	**20,272**
Total Engineering Construction:											
June, 1952—4 weeks	**55,871**	**222,023**	**219,602**	**175,105**	**341,170**	**126,883**	**1,140,654**	.....	.....	.....	**62,760**
May, 1952—5 weeks	77,266	277,058	272,240	272,694	350,466	183,918	**1,433,642**	.....	.....	.....	103,586
June, 1951—4 weeks	47,077	169,305	226,886	203,889	235,377	144,553	**1,027,087**	.....	.....	.....	104,923
Six Months—1952	**308,984**	**1,278,308**	**1,463,780**	**1,047,238**	**1,869,316**	**815,088**	.....	**6,782,714**	.....	**− 7**	**617,039**
Six Months—1951	238,444	1,329,964	1,574,295	1,342,208	1,820,759	977,259	.....	.....	7,282,929	.....	590,314
% Change '51 to '52	+30	−4	−7	−22	+27	−17	.....	.....	.....	.....	+45



Industrial building 150% over 1950

Industrial building contract volume, for the first six months of this year, was 150% above 1950. The outlook is good for the rest of 1952.

Although this year will probably not come up to last year's record level of industrial building, 1952 will be the second biggest year in U. S. history for new plant construction.

Industrial building contract awards, as reported to ENGINEERING NEWS-RECORD, ran up a total of $1,500 million in the first half of 1952. This compares to the all-time record volume of $2,400 million in the first six months of 1951 and $600 million in the 1950 period.

Contract volume for the second quarter of this year was higher than the first quarter—$801 million compared with $698 million—and was not far behind the second quarter of 1951 when $866 million in contracts were let for industrial building.

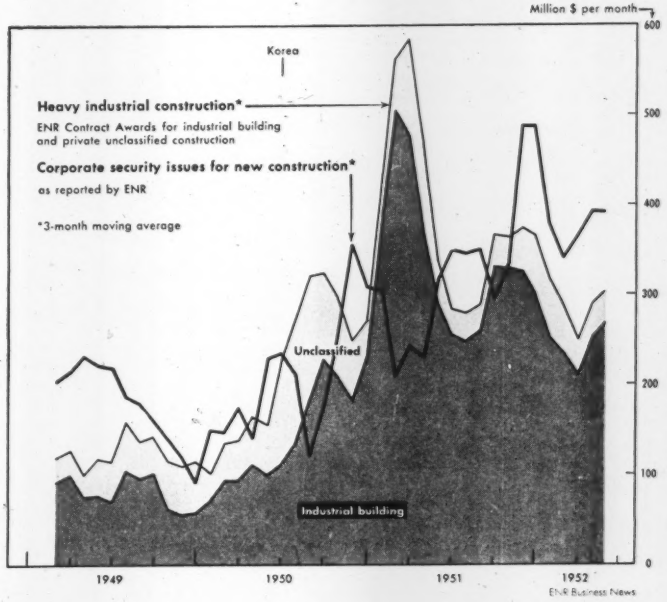
• **Process industries set the pace**—The process industries, which include production of primary aluminum, continue to set the pace this year in industrial building. In the first half of 1952, contracts were let for the construction of $707 million in new chemical plants. That is 4% more contracts than were let in the 1951 period. In May and June alone of this year, contracts amounted to $313 million for the process industries.

Metal refining and rolling plants were another major type of industrial building during the first six months of this year.

Contracts for this type of construction accounted for $239 million, but that was more than a 60% drop from the $619 million in contracts for the first half of 1951.

Metal refining and rolling plant construction turned down in May and June. It is not expected to resume its impressive role of early 1951. Steel capacity, particularly, is well on the way toward its present expansion goal and fewer contracts will be let for that type of construction.

However, development of taconite as a major source of iron ore is one bright spot which might help sustain this type of construction.



• **Third quarter outlook**—Industrial building should continue at a high level in the third quarter. An important factor, which could slow down the pace, is the steel strike. Some of the effects of the strike might not be felt for six weeks or more after the strike ends.

There are good reasons to believe that industrial building will have a healthy third quarter.

Capital expenditures for new plant and equipment, according to the joint survey made by the Securities and Exchange Commission and the Department of Commerce, will be higher in the third quarter for several key industries.

Electric and gas utilities plan to spend more than $1 billion in the third quarter for plant and equipment, the highest rate of any quarter to date.

Much of this expenditure will be for generating and other equipment,

but a good share of it will go for construction.

Petroleum and coal products industry plans to up its expenditures to nearly $700 million, which is more than was spent in any quarter in either 1951 or to date in 1952.

Chemicals and allied products is another area which plans record expenditures for new plant and equipment in the current third quarter with a total of more than $400 million scheduled.

On the downgrade side, both primary iron and steel and non-ferrous metals plan to cut back the rate of expenditures for new plant and equipment in the third quarter. However, expenditures will remain at relatively high levels.

Expenditures by non-ferrous metal producers are estimated at $129 million in the third quarter, only 7% under the record second quarter of this year.

Manufacturers of machinery, including electrical, have also slackened their rate of investment in new plant and equipment for the third quarter. But they still plan to spend $276 million, only 6% less than in the second quarter.

Industrial building is booming west of the Mississippi.

Contracts for $632 million of industrial building were racked up in the first half of 1952, a gain of 10% over 1951. This was the only region to show a gain in industrial contracts over the previous record year of 1951.

The Middle West, with $306 million, and the South, with $291 million, were next highest in industrial building contract volume. But both sections were far under 1951.

Contracts in the Far West were 33% under the first half of last year, while in the Middle West volume was down 51%.

Industrial building in 1952 has suffered most in the Middle Atlantic Region where contract volume amounted to only $143 million for the first six months of 1952. That is 74% under the $544 million racked up in booming 1951.

• **The future looks bright**—Long-range prospects for industrial building look bright. ENGINEERING NEWS-RECORD's backlog of industrial building at the end of June had reached a cumulative total of $9.7 billion, more than twice the total backlog of $4.7 billion on the books at the outbreak of the Korean war.

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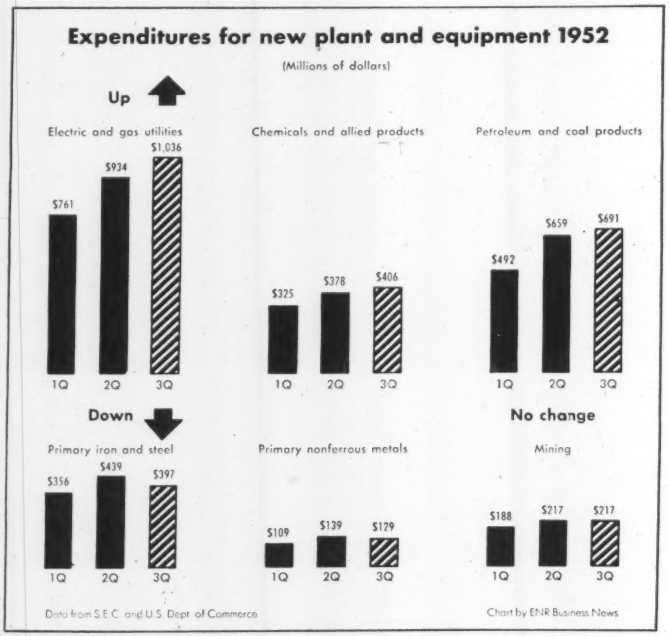

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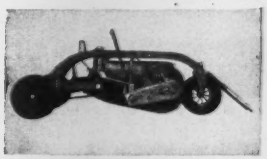

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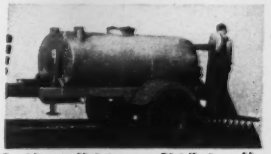

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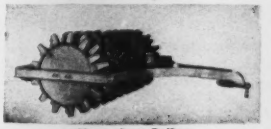

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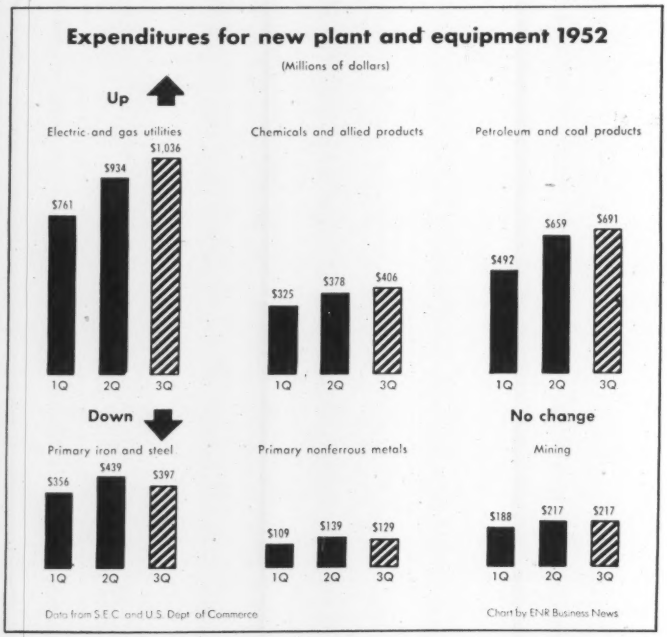

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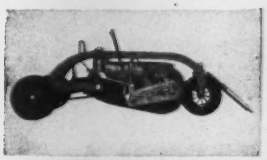

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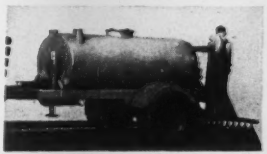

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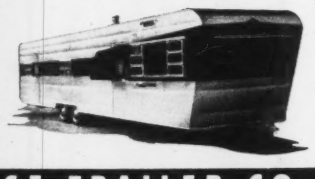

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BUSINESS AND FINANCE

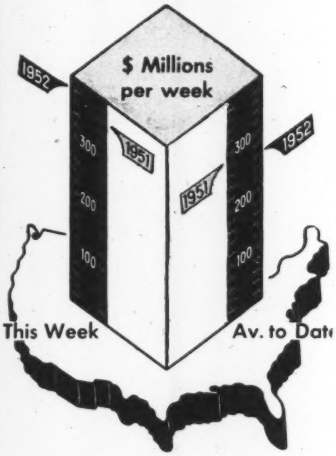
slightly to $3.152 per hour, 0.4% higher than June.

On the materials side, lumber prices slipped from the high mark of the year, set in June. Fir 2 x 4s averaged $109.555 per mftbm, down 0.7% from last month, while the average price of pine 2 x 4s declined 0.8% to $92.333 per mftbm. The average for both fir and pine in July was 2% below the 1951 high which occurred last May.

Cement was up a penny this month to $3.21 per barrel on a 20-cities average. There was no change in the mill price of structural steel.

Activity This Week

As reported to ENR (in millions of dollars)



Contracts by type of work

	This Week	Cumulative 28 wks 1952	1951	% chge
Waterworks	$5.5	$130.4	$120.9	+8
Sewerage	4.1	142.5	174.9	−19
Bridges	8.9	214.4	177.4	+21
Highways	37.0	821.1	613.5	+34
Earthwork, waterways	9.9	299.3	309.4	−3
Buildings:				
Public	89.0	1,071.9	1,293.0	−17
Housg., pub.	5.4	444.9	458.4	−3
Housg., priv.	122.5	1,633.0	1,089.5	+50
Commercial	11.3	338.4	366.7	−8
Industrial	41.5	1,581.3	2,427.8	−35
Unclassified	46.6	710.4	1,017.1	−30
Total	**$381.7**	**$7,387.6**	**$8,048.6**	**−8**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR indexes		Base Year = 100 1913	1926	1949
Constr. cost.	July	570.65	274.31	119.63
	June	561.69	270.00	117.75
Bldg. cost.	July	414.46	224.04	117.81
	June	412.50	222.98	117.26
Volume	June	543	221	157

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section

NEW ENGLAND

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Merritt-Chapman & Scott Corp.**, 79 Milk St., Boston, Mass., CA. $1,195,714, aviation gasoline and jet fuel and distr. sys., Melville, Spec. 31240, NEWPORT, R. I. P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass. Bids June 17. CD 6/25, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Theodore Loranger & Sons, Inc.**, 404 Nash Rd., New Bedford, Mass., CA. $1,406,000. COLD STORAGE PLANT, Naval Supply Depot, Spec. 31223, NEWPORT, R. I. P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass. Bids June 19. CD 6/30 under LB.

▲ **The Wadhams & May Co.**, 15 Lewis St., Hartford, Conn. CA. $1,475,462, Y.M.C.A. BLDG., High St., NEW BRITAIN, CONN. Young Mens Christian Assoc., 6 Court St., New Britain, Conn. Awarded June 19. CD 6/5.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

July 15, New Jersey — July 24, New York

STREETS AND ROADS

July 15, New Jersey — July 24, New York

July 25, Pennsylvania

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ NEW YORK—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,

Rusciano & Son Corp., 728 E. 212 St., New York 67, N. Y., LB $1,878,505, est. $2,250,000. 1.48 mi. elimination of grade crossings of Terrace Pl. and Central Ave. in village of Valley Stream with the L. I. R. R. PSC 5466 and 14337, Nassau Co. Bids June 26. CD 6/4.

▲ NEW YORK—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,

Bruno J. Caradori Constr. Co., 78 Court St., Lancaster, N. Y., LB $221,360, est. $257,000, 4.75 mi. Andes-Margaretville, S.H. 8017, F.A. R.C. 52-45, Delaware Co.; LB $218,465, est. $239,000, 5.69 mi. Colliers-Maryland S.H. 5240-5240A, F.A. R.C. 52-57, Otsego Co.;

Del Balso Constr. Corp., 500 Zerega Ave., New York 61, N. Y. LB $59,875, est. $61,000. 0.83 mi. Harts Corners-White Plains, S.H. 1370, F.A. R.C. 52-44, Westchester Co.;

John Arborio, Inc., W. Cedar St., Poughkeepsie, N. Y. LB $2,259,276, est. $2,456,000, 2.9 mi. access, 9.64 mi. Palisades Interstate Pkway, Pts 1 and 2 (Rte. 45-Queensboro), PIP, 52-2P, Orange and Rockland Counties; LB $713,915, est. $838,000, 11.7 mi. Claverack-Kinderhook, Pt. 1, S.H. 1919, Claverack-Kinderhook, Pt. 2 and President Van Buren Farm-Valatie, Pt. , S.H. 8497, F.A. R.C. 52-55, Columbia Co.;

C. J. Langenfelder & Son, Inc., 8427 Pulaski Hy., Baltimore, Md., LB $3,301,015, est. $3,400,000. 7.31 mi. Deposit-Hales Eddy S.H. 5045, Hales Eddy-Hancock S.H. 5167, F.A. R.C. 52-39, Delaware Co.;

Luck Bros. Constr. Co., Plattsburg, N. Y., LB $88,466, est. $102,000. 3.13 mi. Willsboro-Keeseville, Pt. 1, S.H. 1687, Proj. F.A. R.C. 52-52, Essex Co.;

Sheridan Constr. Corp., Buffalo, N. Y., LB $131,000, est. $131,000, 2.87 mi. Cutting-French Creek S.H. 939, FA. RC. 52-47, Chatauqua Co.;

James F. Hanna, Cooper St., Vernon, N. Y., LB $96,708, est. $116,000. 2.73 mi. State Bridge-Verona Station S.H. 8432, FA. RC. 52-60, Oneida Co.;

Kendall Roadways, Inc., 1373 William St., Buffalo, N. Y. LB $166,166, est. $170,000. 2.34 mi. Cambria-Lockport S.H. 1045, Sadalsons Cors.-Cambria Center S.H. 9014, FA. RC. 52-41, Niagara Co.;

A. L. Blades & Sons, Hornell, N. Y., LB $241,116. est. $245,000. 3.41 mi. Wayland-Dansville, Pt. 1, S.H. 1292, FA. RC. 52-63, Steuben Co.;

Callanan Road Impro. Co., Quarry South St., South Bethlehem, N. Y., LB $163,398, est. $230,000. 7.5 mi. East Nassau-Brainard S.H. 439, East Nassau S.H. 196, Hoags Corners-S.H. 55, FA. RC. 52-53, Rensselaer Co.;

New York Materials, Inc., Fort Edward, N. Y., LB $159,471, est. $165,000. 5.2 mi. Glens Falls-East Lake George, Pt. 2, S.H. 1813, FA. RC. 52-58, Warren Co.;

Warren Bros. Roads Co., 33 Cambridge Parkway, Cambridge, Mass., LB $149,652, est. $153,000. 3.05 mi. Blodgett Mills Cortland S.H. 881, McGrawville S.H. 378, FA. RC 52-40, RC. 52-48, Cortland Co.;

L. S. Martin, Dundon Heights, Troy, N. Y., LB $302,131, est. $322,000. 5.35 mi. Watkins-Yates Co. line, SH 5334-5334A, North Reading-Dundee, Pt. 2, S.H. 5018, Proj. FA. RC. 52-62, Schuyler, and Yates Counties;

Ador & Booth, 1130 Water St., Watertown, N. Y. LB $99,723, est. $107,000. 0.98 mi. Plattsburg-Chazy, Pt. 2 B, S.H. 8088, FA. RC. 52-42, Clinton Co.,

County Asphalt, Inc., 129 Main St., Tarrytown, N. Y., LB $283,070, est. $287,000. 5.94 mi. Bettsburg-McClure, Pt. 1, S.H. 8266, FA. RC. 52-56, Broome Co.;

Binghamton Constr. Co., Inc., Marine Midland Bldg., Binghamton, N. Y., LB $131,482, est. $133,000. 4.46 mi. Narrowsburg-Callicoon, Pt. 3, S.H. 8449, Callicoon-Long Eddy, Pts. 1, 2, 2A and 3, S.H. 8501, 8494, 8508, FA. RC. 52-46, Sullivan Co.;

received no bids June 26, impry. FA. RC. 52-59, Fulton Co.; FA. RC. 52-49, Cattaraugus Co.; FA. SS. 52-8, Chatauqua Co. CD 6/4 and 6/5.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Herman Axelrod**, c/o J. Herbert Burmeister, archt., 89-30 161 St., Jamaica, N. Y. Owner Builds. Approx. $1,900,000. 100 HOUSES on 25-acre tract at 232 St. and 56 Ave., BAYSIDE, N. Y.

▲ **Woodbury Manor Homes**, c/o Julius Fishkind, archt., 161-19 Jamaica Ave., Jamaica, N. Y. Owner Builds. $1,350,000. 135 HOUSES on tract at Woodbury Rd. and East St., HICKSVILLE, N. Y.

▲ **Brewster Manor Homes**, c/o Oscar I. Silverstone, archt., 153 Pierrepont St., Brooklyn 2, N. Y. Owner Builds. Approx. $3,500,000. 350 HOUSES on tract on Hicksville Rd., north of Southern State Parkway, MASSAPEQUA, N. Y.

▲ **Clearview Village Homes**, c/o Samuel Paul, archt., 163-18 Jamaica Ave., Jamaica, N. Y., Owner Builds. Approx. $10,000,000. 645 HOUSES on 146 acre tract, on South Oyster Bay Rd., SYOSSET, N. Y.

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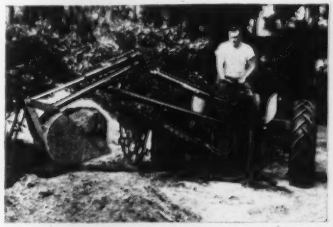

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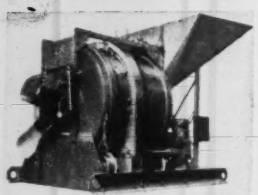

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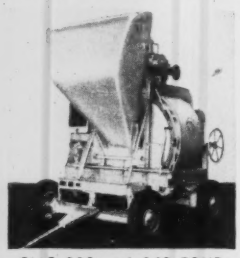

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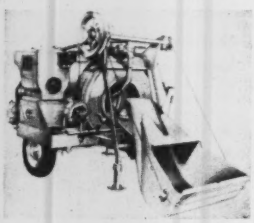

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CONSTRUCTION MACHINERY COMPANIES

WATERLOO, IOWA

▲ Woodmere Park Homes, c/o Samuel Paul, archt., 163-18 Jamaica Ave., Jamaica, N. Y. Owner Builds. $6,000,000. 200 HOUSES on tract at Peninsula and Woodmere Blvds., WOODMERE, N. Y.

▲ Bechtel Corp., 151 E 42 St., New York, N. Y. CA $2,500,000. catalyst mfg. PLANT, PAULSBORO, N. J. Socony-Vacuum Oil Co., Inc., 26 Broadway, New York, N. Y.

▲† Montgomery Constr. Co., 803 W. Main St., Grove City, Pa., LB. $1,550,000 G. S. A. WAREHOUSES 1 and 2, Letterkenny Ordnance Depot, Serial No. ENG 18-52-54, CHAMBERSBURG, PA. U. S. Eng., 24 St. and Maryland Ave., Baltimore 18, Md. Bids June 25. CD 6/9.

▲ D. M. Bare Paper Co., Roaring Spring Pa. Separate Contracts. Approx. $5,850,507, paper pulp mfg. PLANT, ROARING SPRING, PA.

▲ Siesel Constr. Co., 203 Flannery Bldg., Pittsburgh, Pa., CA. Approx. $1,000,000. 6 story, bsmnt., 81x97 ft., and 35x81 ft., brick, steel HOSPITAL addns., SEWICKLEY, PA. Sewickley Valley Hospital, Sewickley, Pa. Bids May 14. CD 4/17.

▲ Morrow Bros., Inc., 2315 N. Charles St., Baltimore 18, Md. LB Est. $1,748,300. brick, concrete, steel Towson Catholic HIGH SCHOOL and CONVENT addn., TOWSON, MD. Immaculate Conception Parish, Baltimore and Wares Ave., Towson, Md. Bids June 23. CD 6/5.

▲ Morauer & Hartzell, Inc., 1620 2nd St. S.W. Wash., D. C. CA. $1,558,425, grading, drainage for extens. of East Capitol Street Bridge from 19 St. to Kingman Lake.

J. A. LaPorte, Inc., Arlington, Va., CA. $150,054, Alt. 1-B. WASH., D. C. Dist. Columbia, Dir. Hys., District Bldg., 14 and E Sts., N. W. Wash. 4, D. C. Bids June 18, awarded June 23. CD 6/20 under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 18 Kentucky
STREETS AND ROADS
July 15 West Virginia July 18 Kentucky
July 23 Louisiana

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† The Curtis Builders, Inc., 1906 M St. N. W., Wash., D. C., CA. $1,668,770, 3,000 ft. rocket launcher at Naval Proving Grounds, Cont. No. NOY 71703, DAHLGREN, VA. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. Bids June 26. CD 7/1, under LB.

▲† T. A. Loving & Co., Bank of Wayne Bldg., Goldsboro, N. C., CA. $1,658,750, operations hangar (Denver type) NOY 70703, Spec. 32237. CAMP LEJEUNE, N. C. P. Wks. Office, Box 365, Naval Base, Charleston, S. C. Bids June 11. CD 6/17, under LB.

▲† W. D. Owens Constr. Co., 3800 16 St., N. St. Petersburg, Fla., CA. $1,433,348, rehabilitation of water, sewer and power systems. CAMP BLANDING, FLA. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. Bids June 17. CD 6/23.

▲† J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C. LB $3,967,000. airmen's quarters and mess facilities at Main Field, Eng 01-076-52-85, EGLIN AIR FORCE BASE, FLA. U. S. Eng., P.O. Box 1169, Mobile 7, Ala. Bids June 27. CD 6/3.

▲ LOUISIANA—State Hy. Dpt., Highway Office Bldg., Baton Rouge.

Allied Structural Steel Co., 20 N. Wacker Dr., Chicago, Ill. LB. $1,287,062. bridge superstructure consisting fifteen 75 ft. spans, two 75 ft., 113.4 in. spans, five 360 ft. high steel fixed spans, Red River at Miller's Bluff on Plain Dealing-Hosston Hy., State Rte. 109, S.P. 83-03-07, F.A. Secondary Proj. S 147 (3), Caddo and Bossier Parishes. Bids June 25. CD 5/20.

▲† S. & L. Constr. Co., 3305 Lomardi Lane, Dallas, Tex. CA. $1,431,506. airmen's dormitories, etc., Barksdale Air Force Base, Inv. 52-28, SHREVEPORT, LA., U. S. Eng., 300 Broadway, Little Rock, Ark. CD 6/4, under LB.

▲† J. A. Jones Constr. Co., P.O. Box 1818, Shreveport, La. LB. $1,088,060. warehouse at Barksdale Air Force Base, Inv. 52-54, SHREVEPORT, LA. U. S. Eng., 300 Broadway, Little Rock, Ark. Bids June 25. CD 6/3.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† Jeffress-Dyer, Inc., 908 20th St. N.W., Wash., D. C. LB. $1,375,419, PHYSICS BLDG., CHARLOTTESVILLE, VA. University of Virginia, Charlottesville, Va. Bids June 18. CD 5/19.

▲† American Constr. Co., Inc., 261 Constitution Ave. N.W., Wash., D. C. CA. $1,055,650, addnl. STORAGE and MAGAZINE facilities at U. S. Naval Proving Grounds, NOY 73339, DAHLGREN, VA. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. Bids June 18, awarded June 26. CD 6/26, under LB.

▲ Daniel Constr. Co., 429 Main St., Greenville, S. C. LB. $1,900,000. POWER PLANT bldg., superstructure, mechanical equip., etc. MONCKS CORNER, S. C. South Carolina Public Service Auth., Moncks Corner, S. C. Bids June 24. CD 6/4.

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▲† **J. A. Jones Constr. Co.,** 133 Ellis St. N.E., Atlanta, Ga., LB. $11,888,921, misc. BUILDINGS and appurtenances, Eng 09-133-52-51, FORT BENNING, GA. U. S. Eng., Post Office Bldg., Savannah, Ga. Bids June 25. CD 5/28.

▲ **State Dpt. P. Welfare,** State Office Bldg., Atlanta, Ga., rejected bids June 20, twin bldgs. addn. at State HOSPITAL, MILLEDGEVILLE, GA. LB $1,025,000. CD 6/26, under LB.

▲ **Ray M. Lee Co.,** 1004 Edgewood Ave., Atlanta, Ga., CA. $1,255,292, HOSPITAL, VALDOSTA, GA. Valdosta-Lowndes County Hospital Auth., Valdosta, Ga. Bids June 19. CD 6/25, under LB.

▲ † **J. W. Bateson Co., Inc.,** Irwin-Keasler Bldg., Dallas, Tex., LB $4,663,775, 4 WAREHOUSES at Anniston Ordnance Depot, ENG 01-076-52-69, ANNISTON, ALA. U. S. Eng., P. O. Box 1169, Mobile 7, Ala. Bids May 15. CD 4/11.

▲† **R. P. Farnsworth & Co., Inc.,** Box 2029, Baton Rouge, La. CA. $1,325,000. addnl. ENGINE TEST CELL BLDG., Michoud Ordnance Plant, Eng. 41-243-52 102, NEW ORLEANS, LA. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. CD 6/25, under LB.

▲† **J. W. Bateson Co., Inc.,** Irwin-Keasler Bldg., Dallas, Tex., ▲ $6,081,574, est. $6,000,000. 6 permanent WAREHOUSES, Memphis General Depot, Serial No. ENG 40-158-52-18, MEMPHIS, TENN. U. S. Eng., 303 Federal Office Bldg., Nashville 1, Tenn. Bids June 4. CD 6/10. under LB.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 15 Wisconsin
STREETS AND ROADS
July 15 Indiana July 15, 22 Wisconsin

▲ **Ill., Chicago**—B.A. 7/21—City, City Hall, bascule bridge Halsted Ave. over North Branch of Chicago River. $2,000,000. CD 3/19/45.

▲ **Ill., Chicago**—B.A. 7/21—City, City Hall, substructure for bascule bridge over South Branch of Chicago River, on Van Buren St. $2,600,000. CD 5/15.

BIDS ASKED—BUILDINGS

▲ **Wis., Madison**—DIAGNOSTIC CENTER—B.A. 8/1—State, Dpt. P. Welfare, Madison, 4 story, rein.-con., steel, brick, diagnostic center, $1,200,000. Plans depsit $50. Eschweiler & Eschweiler, 320 E. Mason St., Milwaukee, Zone 2, archts. CD 8/15/52

▲ **Ind., Hammond**—ENGINEERING BLDG.—Bids Asked—Standard Oil Co. of Indiana, 910 S. Michigan St., Chicago 5, Ill. 2 story, 100,000 sq. ft. engineering bldg. $1,200,000. Holabird & Root & Burgee, 180 N. Wabash St., Chicago 1, Ill., archts.

▲ **Mich., Detroit**—CITY-COUNTY BLDG.—Bids Asked—At office Harley, Ellington & Day, Inc., archt., 153 E. Elizabeth St., 14 and 20 story, base, sub-base, brick, steel, concrete city-county bldg. for Detroit and Wayne County, City-County Bldg. Auth., Detroit, Mich. $17,000,000. CD 1/16/51.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Procon, Inc.,** 75 E. Jackson St., Chicago, Ill., CA. Approx. $3,500,000-$4,000,000. CATALYTIC NAPTHA REFORMER for making high-octane gasoline with 10,000 bbl. daily capacity, TOLEDO, O. Sun Oil Co., 1608 Walnut St., Phila., Pa. Joseph Hearn, c/o owner, project engr. CD 8/28/51.

▲† **John L. Simmons Co., Inc.,** Union Title Bldg., Indianapolis, Ind., CA. $3,074,000. AMMUNITION LOADING PLANT, 18 structures on 50-acre site, incl. projectile receiving and painting unit, 2 loading and drilling bldgs., powder magazines, gauge loading and assembly plant and shipping bldg., Spec. 32078, CRANE, IND. P. Wks. Office, 9th Naval Dist., Great Lakes, Ill. Bids May 22, awarded June 20. CD 4/29.

▲ **Wm. B. Pollock Co.,** 101 Andrews Ave., Youngstown, O., CA. $6,400,000. BLAST FURNACE, CHICAGO, ILL. Interlake Iron Co., Torrence and 112 Sts., Chicago, Ill. Awarded June 19.

▲† **W. E. Schweitzer Co.,** 2207 Dodge St., Evanston, Ill., LB. $2,196,500. technical SERVICE SCHOOL, GREAT LAKES, ILL. Dist. P. Wks. Office, Ninth Naval Dist., Great Lakes, Ill. Skidmore, Owings & Merrill, 100 W. Monroe St., Chicago 3, Ill., archts. Bids June 20. CD 5/27.

▲ **Northwest Constr. Co.,** 300 Lawyer Bldg., Detroit, Mich. CA. Approx. $10,000,000. 500 brick single HOMES, Sylvan Manor, Pine Lake and Long Lake, Middlebelt Rd., BLOOMFIELD HILLS, MICH. Jack Raisin & Nathan D. Rosin, 300 Lawyers Bldg., Detroit, Mich.

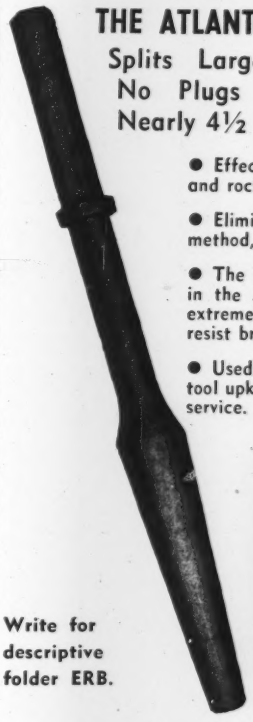
▲ **O. W. Burke Co.,** 1032 Fisher Bldg., Detroit, Mich. CA. Est. $1,000,000. 1 story, brick, stone CHURCH, Joy Rd. near Greenfield opposite Ford Cemetery, DETROIT, MICH. St. Martha Episcopal Parish, Rt. Rev. Richard S. Emrich, STD. 63 E. Hancock St., Detroit, Mich. Bids June 5. CD 6/2.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 18 Minnesota
STREETS AND ROADS
July 15 Iowa July 18 Minnesota

ATLANTIC Pneumatic TOOLS

Use with your standard power pavement equipment . . . .



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Nearly 4½ times faster

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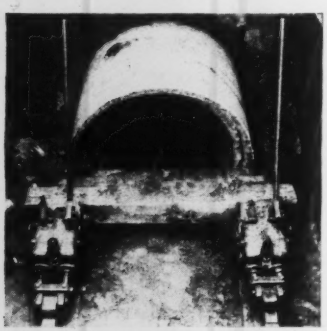

GREENLEE

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▲ **Tex., Fort Worth**—B.A. 7/24—City, City Hall, raw water conduit. $1,000,000. Plans deposit $25. Extended date. Freese & Nichols, 407 Danciger Bldg., and Joe J. Rady, 811 Insurance Bldg., engrs. CD 6/24.

BIDS ASKED—BUILDINGS

▲ **Tex., Midland**—CHURCH—B.A. 7/24—First Baptist Church Congregation, Midland, 48,170 sq. ft. masonry church, auditorium, educational bldgs. $1,000,000. Extended date. Mark Lemmon, 1210 Main St., Dallas, archt. CD 6/3.

▲ **Tex., Longview**—PLANT—Bids Asked—Texas Eastman Co., James O. White, pres., Longview, plastics plant. $7,000,000. CD 6/23.

▲ **Tex., Longview**—PLANT—Bids Asked—Petrolite Corp. Ltd., Laclede Bldg., St. Louis, Mo., chemical plant. $1,500,000. CD 6/1/61.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Chambers & Tarbell Constr. Co.**, 1643 Belleview St., Kansas City, Mo. CA $3,315,232, est. $3,737,553. 2 masonry airmen's dormitories, mess hall, heating plant, etc., Grandview Air Force Base, Eng. 23-028-52-62;

Tetyak-Young Constr. Co., Overland Park, Kan. CA $525,934, est. $610,019, water distr. sys. Grandview Air Force Base, Eng. 23-028-52-57, GRANDVIEW, MO. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Awarded June 27. CD 7/1, under LB.

▲† **Lipsett, Inc.**, 100 Park Ave., New York, N. Y. LB $1,032,945, (1A), construct auger, pad, caisson and timber pile footings, LB $1,226,288, (1B), construct auger, pad and timber-pile footings; LB $1,281,690, (1C) construct auger, pad and concrete pile footings, LB $624,800, Schedule 2, erecting steel towers;

Donovan, Inc., 1725 Carroll Ave., St. Paul, Minn., LB $1,113,762, Schedule 3, string conductors and overhead ground wires for Fort Randall-Sioux City 230-kv transmission line, Spec. DC 3731, Missouri River Basin Proj., SOUTH DAKOTA and IOWA. Bureau Reclamation Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo. Bids June 25. CD-6/4.

▲† **Bushman Constr. Co.**, 5 and Felix Sts., St. Joseph, Mo., CA $1,201,361, Schedules 2, 3, and 4, earthwork and structures for Franklin Canal, Station 0 plus 42.4 to 750 plus 00 and drains, Spec. DC 3720, Missouri River Basin Proj., Bostwick Div., NEBRASKA. Bureau Reclamation, Dpt. Interior, Superior, Neb. Bids June 12, awarded June 25. CD 5/22.

▲† **Glade Constr. Co.**, Century Bldg., Fort Worth, Tex., LB $1,814,242, base bid;

J. J. Fritch, 6864 E. Hines Blvd., Dallas, Tex., LB $1,833,996, Alt. 1, for dormitories, mess and admin. bldg.

Harris-Cross Co., Tyler, Tex., LB $147,254, est. $160,000 bachelor officer quarters;

E. B. Bush Constr. Co., 4000 W. Reno St., Oklahoma City 4, Okla., LB $152,935, est. $166,000. motor pool area and vehicle repair shop, Inv. No. Eng 34-066-52-77, ALTUS, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids June 25. CD 6/11.

▲ **TEXAS**—State Hy. Comn., Austin,

Dean Word Co., P. O. Box 330, New Braunfels, Tex., LB $1,014,034, Leon River Bridge (rein.-con.) and approaches Hy. St. 31, Proj. C 184-2-12, Bell Co. Bids June 17.

▲† **Powell, Samanie & Carruth**, Gatesville, Tex., CA $1,118,621, est. $1,231,421, misc. shop type bldgs. at Wolters Air Force Base, Inc. No. Eng 414-443-52-48, MINERAL WELLS, TEX. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bids June 17, awarded June 27. CD 6/20 under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Patti Constr. Co. and McDonald Constr. Co.**, 1340 Admiral Blvd., Kansas City, Mo. CA $2,149,254, 7 WAREHOUSES, etc., Lake City Arsenal, Eng. 23-028-52-70. Bids June 19 awarded June 25. CD 6/11;

W. W. Bennett Constr. Co., 3252 Roanoke Rd., Kansas City, Mo. CA $1,441,375, 4 tracer wings, 88,664 sq. ft. Part II addnl. facilities, Lake City Arsenal, Eng. 23-028-52-58. Bids June 24, awarded June 25. CD-6/18, INDEPENDENCE, MO. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo.

▲ **Reed P. Byers**, Waldheim Bldg., Kansas City, Mo. Owner Builds. $2,500,000. 300 RESIDENCES, LIBERTY, MO.

▲† **Lembke-Clough & King Co.**, 1719 N. 5 St., Albuquerque, N. M., CA. $1,636,543. TECHNICAL TRAINING BLDG., Sandia Base, Inv. No. Eng 29-005-52-65, ALBUQUERQUE, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids May 30. CD 6/4, under LB.

▲ **J. F. Pritchard Co.**, 727 Natl. Bank of Tulsa Bldg., Tulsa, Okla., CA. Approx. $7,500,000. ELECTRIC POWER GENERATING PLANT, ARTESIA, N. M. Southwestern Public Service Co., 3 and Polk Sts., Amarillo, Tex., E. W. Robinson, c/o owner, engr.

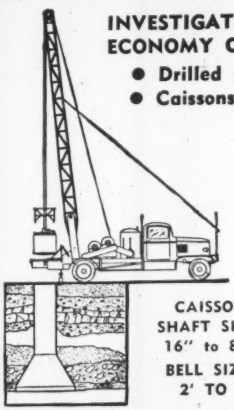
FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

STREETS AND ROADS

July 23, California



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HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **J. Kenneth Thayn**, 2670 Berkeley Circle, Salt Lake City, Utah, LB. **$1,431,529.** rehabilitation roads, railroads at U. S. Naval Ammunition Depot, NOY 73490, Spec. 34609, HAWTHORNE, NEV. P. Wks. Office, 12th Naval Dist., San Bruno, Calif. Bids June 24. CD 6/5.

Scheumann & Johnson, Lloyd Bldg., Seattle, Wash. LB. **$713,429,** est. $757,895. relief trunk sewer in Henderson St., SEATTLE, Wash. City County-City Bldg., Seattle 4, Wash. Bids June 25. CD 6/17.

▲† **Zoss Constr. Co.**, 1037 Cole Ave., Los Angeles, Calif. LB **$2,113,845.** 6 dormitory bldgs., 2 mess-admin. bldgs., Fairchild Air Force Base, Inv. 52-34, SPOKANE, WASH. U. S. Eng., City-county Airport, Walla Walla, Wash. Bids June 26. CD 5/26.

CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles,

Chas. MacClosky Co., 112 Market St., San Francisco, Calif., CA **$746,708,** 8 rein.-con. bridges on Ramon Freeway between Los Angeles Co. line and Rt. 192, San Bernardino Co. Bids June 12, awarded June 23. CD 6/18, under LB.

▲† **Stolte, Inc. and Gallagher & Burk, Inc.**, 8451 San Leandro St., Oakland, Calif., CA. **$1,058,000.** water, sewer, gas lines, other imprvs. at Supply Depot area, U. S. Naval Air Station, NOY 72362, Spec. 32779, ALAMEDA, CALIF. Twelfth Naval Dist., San Bruno, Calif. Bids June 6, awarded June 24. CD 6/11, under LB.

▲† **Del E. Webb Constr. Co.**, 5101 San Fernando Rd., Los Angeles, 39, Calif., LB. **$2,094,783.** construct utilities, ENG 04-203-52-12, FORT ORD, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids June 24.

▲ **Connolly Pacific Co.**, P.O. Box 1251, Pier A, Long Beach, Calif., LB. **$1,811,800,** quay wall at pier D, Berth 32, 33, 34, Long Beach Outer Harbor. Spec. HD 350, LONG BEACH, CALIF. Long Beach Port Mgr., 1333 El Embarkadero, Long Beach, Calif. Bids June 24. CD 6/9.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Haas & Haynie**, 275 Pine St., San Francisco, Calif., CA. **$4,558,000.** construct SCHOOL of Engineering Bldg., 1st increment, U. S. Naval Postgraduate School, NOY 72361, Spec. 32778, MONTEREY, CALIF. Twelfth Naval Dist., San Bruno, Calif. Bids June 11, awarded June 24. CD 6/18, under LB.

▲ **Indenco**, 960 98 Ave., Oakland, Calif., LB **$1,042,658,** Pleasant HILL HIGH SCHOOL, PLEASANT HILLS, CALIF. Mount Diablo Unified School Dist., Grant St., Concord, Calif. Reynolds & Chamberlain & Assoc., 3883 Piedmont Ave., Oakland, Calif., archts. CD 10/3/51.

Swinerton & Walberg, 1723 Webster St., Oakland, Calif., CA. **$749,500,** BOILER HOUSE, and SHOPS at Fairmount Hospital, SAN LEANDRO, CALIF. Alameda Co., Court House, Oakland, Calif. Bids June 24. CD 6/11.

▲ **Johnson, Drake & Piper**, 9909 San Leandro St., Oakland, Calif., LB. **$4,149,000,** general constr.

Wismer & Becker, 1219 28th St., Sacramento, Calif., LB. **$530,870,** electrical work.

Macmsons Contr. Engineers, 161 Tehama St., San Francisco, Calif., LB. **$1,230,587,** plumbing, etc. for INSTITUTE GROUP, California Medical Facilities, near VACAVILLE, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids June 24. CD 5/14.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **ALASKA**—Alaska Road Comn., 311 Federal & Territorial Bldg., Juneau.

Stock & Grove, Inc., Anchorage, Alaska, CA. **$768,610,** clearing, grading, draining 4.3 mi. Glenn Hy., Sect. C. Bids June 16. CD 6/23, under LB.

CANADA

BIDS ASKED—BUILDINGS

▲ **Que., Sherbrooke**—PUBLIC BLDG.—B.A. 7/23—Dpt. P. Wks., Ottawa, Ont., public bldg., St. Edward and King Sts. West. $2,000,000. E. A. Gardner, c/o owner, archt.

SOON LETS CONTRACT—BUILDINGS

▲ **Que., Montreal**—FACTORY—At office Greenspoon & Assoc., archts., 4151 Sherbrooke St. W., soon lets contract 12 story, concrete, brick, stone factory, Mayor St. for G. Brown, Inc., 460 W. St. Catherine St. $1,500,000. I. S. Backler, 1230 McGill College Ave., engr.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Saracini Constr. Co.**, 319 Burnhamthorpe Rd., Islington, Ont. Owner Builds. **$10,000,000.** HOUSING DEVELOPMENT, incl. 360 homes, shopping center, 10 apartment bldgs., suburban Orchard Heights, TORONTO, ONT. Venchiarutti & Venchiarutti, 2941 Bathurst St., Toronto, Ont., and Hanks & Irwin, 2848 Bloor St. W., Toronto, Ont., archts.

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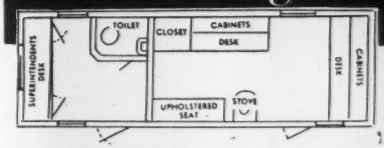

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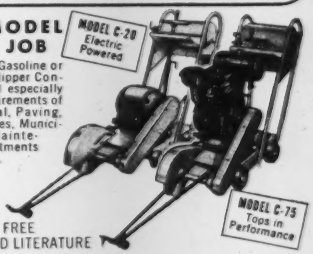

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—BUILDINGS

Mass., Malden—HOSPITAL—B.A. 7/22—Malden Hospital, Sidney M. Price, pres. Hospital Bd., hospital addns., alterations. $500,000. James H. Ritchie & Assoc., 38 Newbury St., Boston, archts. CD 4/17/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

C. W. Ten Broeck, Jr., 15 State St., Bangor, Me. CA. general contract;

The Luria Engineering Corp., Eaton Ave., Bethlehem, Pa., CA. fabricate single-storied steel-frame BUILDING, 172 Washington St., BANGOR, ME. R. B. Dunning & Co., 54 Broad St., Bangor, Me. Est. $500,000. Eaton W. Tarbell & Assoc., 84 Harlow St., Bangor, Me., archts. CD 4/9/51.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston.

Berke Moore Co., Inc., 8 Newbury St., Boston, Mass. LB. $2,744,934, est. $2,750,000. UI 286 (7) hy., dike, underpass Auto Rte. 5, West Springfield. Bids June 23. CD 6/12.

† **Zielinski Bros.**, Agawam, Mass. LB. $479,269, runway extensions and taxiways, Bradley Field, ENG 19-016-52-69, WINDSOR LOCKS, CONN. U. S. Eng., 857 Commonwealth Ave., Boston, 15, Mass. Bids June 25. CD 6/17.

BUILDINGS

LOW BIDS AND CONTRACTS

† **C. M. Bacon & Sons**, 146 Tyngsboro Rd., North Chelmsford, Mass.; LB $424,983, improv. 49 mess KITCHENS, Eng. 19-035-52-125, AYER, MASS. Dpt. Army, Purchasing & Contracting Office, Bldg. P-24, Fort Devens, Mass. Bids June 16. CD 6/5.

▲ **S. Volpe & Co., Inc.**, 185 Devonshire St., Boston, Mass. LB. $1,197,000. conversion Bldg. 1 to BG.M. & S paraplegics BUILDING for Veterans Admin. Hospital, Proj. No. 20-5173, WEST ROXBURY, MASS. Veterans Admin., Munitions Bldg., Wash., D. C. Bids June 24. CD 5/21.

† **Poorvu Constr. Co., Inc.**, 292 Washington St., Boston, Mass. LB. $366,427, est. $325,000. 1,000-man ARMORY and MOTOR VEHICLE STORAGE SHED, Lake Ave., Eng. 19-016-52-70, WORCESTER, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids June 23. CD 6/18.

† **Wane-Martin Constr. Corp.**, 135 1837 Ave., Flushing, N. Y. LB. $358,650, ARMORY and MOTOR VEHICLE STORAGE SHED, Wintergreen Ave., ENG 19-016-52-73, NEW HAVEN, CONN. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids June 24. CD 6/19.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Pasquale Constr. Co., Inc., 311 Cornell Ave., Endicott, N. Y. CA. $119,661, Proj. 110, 1,250 ft. roadway with 65 ft. clear span bridge Alpha const. with concrete abutments and deck, South Street County Rd. 528; Proj. 99, 450 ft. roadway and one 22 ft. clear span concrete slab bridge, Tracey Creek County Road 9; 1,950 ft. roadway and one 45 ft. clear span bridge Alpha const. Addlemire County Road 3, BINGHAMTON, N. Y. Broome County Highway Office, County Office Bldg., Binghamton, N. Y. Bids June 2. CD 5/21.

† **Allen N. Spooner**, 143 Liberty St., New York 6, N. Y. CA. $203,503, rehabilitation Piers 13 and 15 at Staten Island Terminal, STAPLETON, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids June 13. CD 5/22.

NEW JERSEY—State Hy. Dpt., 1035 Parkway Ave., Trenton, N. J.

Reid Contg. Co., Inc., Mutton Hollow Rd., Woodbridge, N. J., CA. $608,918, wid'n., resurfacing 4.167 mi. Route 35, Sections 25 B and 34D, Morgan and Keyport, Middlesex and Monmouth Counties. Bids June 17, awarded June 24. CD 6/20, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., State Hy. Office Bldg., Trenton.

Eastern Engineering Co., 4 N. North Carolina Ave., Atlantic City, N. J., CA. $1,146,759, grading 2.285 mi. Route 44, Section 16 from Repaupo Road to Route S-44, Logan Twp., Gloucester Co. Bids May 27, awarded June 24. CD 6/6, under LB.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg.

Putnam & Greene, Inc., P.O. Box 2012, Fort Wayne 3, Ind., CA. $1,046,322, wid'n. 13.58 mi. existing pavement with crushed aggregate base variable 4 to 6 ft.; bit. surf. new base and existing pavement 22 ft. wide, extend 11 existing structures, construct metal plate pipe arch and a rein.-con. bridge over North Camp Run and repair a double 74 ft. span plate girder bridge over West Branch of Susquehanna River, T.R. 36, Clearfield Co. Bids June 6. CD 6/10, under LB.

PENNSYLVANIA—State Hy. Dpt., 506 North Office Bldg., Harrisburg.

Howard Worthington, Box 95, Line Lexington; Pa., CA $572,303, wid'n, to 24 ft. and 34 ft. with curb 5.86 mi. T. R. 413, Bucks Co. Bids May 29. CD 6/3, under LB.

† **Cayuga Foundation Corp.**, 30 Vesey St., New York, N. Y. LB $477,000, installing fuel storage facilities Naval Test Center, NOY 71162, Spec. 32710, PATUXENT RIVER, MD. Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. Bids June 17. CD 5/21.

BUILDINGS

LOW BIDS AND CONTRACTS

Bianco & Pepe Inc., 7 S. Third Ave., Mt. Vernon, N. Y. CA. Approx $500,000. 1 and 2 story MFG. BLDG. on 3-acre site at Beechwood Ave. and Second St., NEW ROCHELLE, N. Y. Emilio J. DiRienzo, 57 Gramatan Ave., Mt. Vernon, N. Y., archt.

Berger-Tilles Projects, 64 Division Ave., Levittown, N. Y. Owner Builds. Approx. $500,000. SHOPPING CENTER, Jerusalem and Wantagh Aves. to be called Cherrywood Shopping Center, WANTAGH, N. Y. William Sambury, A. H. Salkowitz, 37-60 82 St., Jackson Heights, N. Y. archts.

Boulevard Homes, c/o Percy Simon, archts., 462 Cedar Lane, Teaneck, N. J., Owner Builds, $450,000 30 HOUSES on tract the Boulevard off Lincoln Ave., GLEN ROCK, N. J.

Belli Co., 2127 Hamilton Ave., Trenton, N. J., CA, $300,000, 5 story, OFFICE, W. Front and Peace Sts., TRENTON, N. J. N. J. Realty Title Insurance Co., 11 S. Chancery Lane, Trenton, N. J. Hankin, Stull & Backes, 212 W. State St., Trenton, N. J., archts. Awarded June 18.

Massett Bldg. Co., 1516 Atlantic Ave., Atlantic City, N. J. CA, $672,411, Junior High SCHOOL, VINELAND, N. J. Vineland-Landis Twp., Bd. Educ., Vineland, N. J. Bids June 2. CD 6/20, under LB.

▲ **Reisinger Brothers**, 133 E. High St., Carlisle, Pa., CA. $1,250,000. construct, manage, finance, 100 HOUSING units, Township Rd., for Carlisle Barracks Military Personnel, for U. S. Eng., 1217 Federal Office Bldg., 90 Church St., New York, N. Y., CARLISLE, PA. College Arms, Inc., Carlisle, Pa. CD 1/31/51.

† **Southern Construction Co., Inc.**, 1502 Massachusetts Ave., S. W., Wash., D. C., CA, $475,885, 2 story bldg. and penthouse of rein.-con. extension of exterior services, Bldg. 2 at Naval Research Laboratory, Bellevue, NOY 70525, Spec. 32114, WASH., D. C. Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash. D. C. Bids June 5, awarded June 18. CD 5/22.

SOUTH

BIDS ASKED—BUILDINGS

Ga., Augusta—HEALTH CENTER—B.A. 7/22—City and Richmond Co., health center, $380,000. Plans deposit $50. Extended date. Eve & Stulb, Masonic Bldg., Augusta, Ga., archts. CD 6/20.

Tenn., Knoxville—SCHOOL—B.A. 7/25—Bd. Educ., 624 Lamar St., Sam Hill Elementary School. Approx. $300,000. Plans deposit $50.

Va., Hampton—DORMITORY—Bids Asked—Hampton Institute, Hampton, 4 story rein.-con., brick, concrete masonry men's dormitory. $800,000. Hilyard R. Robinson, 1927 11th St. N.W., Wash., D. C., archt. J. DiStasio, 136 Liberty St., New York, N. Y., engr.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NORTH CAROLINA**—State Hy. & P. Wks. Comn., Raleigh.

Ballenger Paving Co., Box 1046, Greenville, S. C., LB. $154,998, est. $150,000-$175,000, traffic bound macad. and bit. surf. tr., 8.62 mi. Proj. No. 1-543, S-613 (1), Warren and Halifax Counties;

J. K. Cecil & Sons, Lexington, N. C., LB. $109,925, est. $100,000-$125,000, traffic bound macad., bit. surf. tr. 6.54 mi. Proj. 6-412, S-604 (1), Randolph Co.;

Dickerson, Inc., Box 448, Monroe, N. C., LB. $88,286, est. $75,000-$100,000. STBC, bit. surf. tr., 5.58 mi. Proj. 6-113, S-561 (1) Chatham Co.; LB. $112,004, est. $100,000-$125,000, sand asph. surf. 19.3 mi. Proj. No. 2-9-17-237, 2-9-20-225, Craven and Jones Counties;

W. E. Graham & Sons, Cleveland, N. C. LB. $150,267, est. $150,000-$175,000. traffic bound macad. b. conc. binder and surf. 2.82 mi. U. S. 158, Proj. 5385, SF-56 (3), Guilford Co.;

Ray D. Lowder, Inc., Albemarle, N. C., LB. $81,410, est. $75,000-$100,000. STBC, bit. surf. tr. 4.56 mi. Proj. 9-406, S-557 (6), Lincoln Co.;

C. G. Poole, Inc., Capital Club Bldg., Raleigh, N. C. LB. $225,068, est. $250,000-$300,000, traffic bound macad., bit. surf. tr. or b. conc. surf. 3.95 mi. Proj. BS 4-7-38-53, Wake Co.;

Sloan Constr. Co., Inc., Box 747, Greenville, S. C. LB. $215,862, est. $200,000-$225,000. b. conc. binder and surf. 18 mi. N. C. 305 and U. S. 158, Proj. 1-6-11-161, 1-6-9-122, Northampton and Hertford Counties;

Nello L. Teer Co., Box 1131, Durham, N. C. LB. $783,820. est. $400,000-$500,000, traffic bound macad., bit. surf. tr. and structures 7.59 mi. Proj. 0-300, Graham Co.; LB. $404,857, est. $400,000-$500,000, fine grading, traffic bound macad., sand asph. base and surf. 18.51 mi. Proj. 2-206, S-421 (2), Craven and Beaufort Counties;

A. R. Thompson Contractor, Inc., Rutherfordton, N. C. LB. $215,532, est. $250,000-$300,000. traffic bound macad. bit. surf. tr. 7.42 mi. N. C. 26, Proj. 8840, S-437 (1), Rutherford and Cleveland Counties;

Wayne Eng. & Constr. Co., Box 306, Mount Olive, N. C. LB. $81,981. est. $75,000-$100,000. STBC, bit. surf. tr. or sand asph. or b. conc. surf. 6.73 mi. Proj. 4-158, S-614 (1), Johnston Co.;

Barrus Constr. Co., Box 561, Kinston, N. C., LB. $74,399, est. $50,000-$75,000, fine grading, STBC, sand asph. or b. conc. surf. 6.01 mi. Proj. 2-353, S-422 (2), Jones and Craven Counties; LB. $64,178, est. $50,000-$75,000, bit. surf. tr. or sand asph. or b. conc. surf. 18.5 mi. Proj. 4-9-39-238, Wayne Co.; LB. $68,441, est. $50,000-$75,000, sand asph. base and surf. 12.3 mi. Proj. 2-7-16-28, 2-7-16-29, 2-9-16-230, Carteret Co. Bids June 24. CD 6/16.

† **R. N. Rouse & Co.,** 1019 N. William St., Goldsboro, N. C., CA. $216,896, site preparations, etc. for Camp Knox Trailer Park, NOY 72963, CAMP LEJEUNE, N. C. P. Wks. Office, Bldg. No. 1005, Marine Barracks, Camp Lejeune, N. C. Bids June 20. CD 5/28.

† **Harrison-Wright Co., Inc.,** 116 W. 3 St., Charlotte, N. C., CA $179,732, installing transformer and voltage regulators, NOY 71543, CAMP LEJEUNE, N. C. P. Wks. Office, Bldg. No. 1005, Marine Barracks, Camp Lejeune, N. C. CD 5/12.

† **Chavis Constr. Co.,** 3107 N. Davis St., Pensacola, Fla., CA, $563,620, bachelor officers quarters at Field No. 9, Inv. 52-64, EGLIN AIR FORCE BASE, FLA. U. S. Eng., P. O. Box 1169, Mobile 7, Ala. Bids May 15. CD 7/25, under LB.

† **Anderson-Gibbs Corp.,** Box 2591, Houston, Tex., CA $769,915, approx. 2,150,000 cu. yd. hydraulic fill East Atchafalaya Basin Protection Levee, Terrebonne Parish, Inv. 52-229, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans 9, La. CD 6/12, under LB.

▲ † **Fairbanks Morse & Co.,** 49 Central St., Cincinnati, O. LB $1,105,123, equipment for Beargrass Creek Pumping Station, Sect. A-B 8 Storm Water Pumps; **General Electric Co.,** Starks Bldg., Louisville, Ky. LB $239,800, Sect. D-C switchgear and sub-station for Beargrass Creek Pumping Station, KENTUCKY. U. S. Eng., 830 W. Broadway, Louisville 3, Ky. Bids June 24. CD 5/19.

† **Helrich Constr. Corp.,** 2100 Ailor Ave., Knoxville, Tenn., CA. $868,349, Item 1, maintenance hangar, dormitories, warehouse, etc. at McGhee-Tyson Air Force Base, Inv. 52-22, KNOXVILLE, TENN. U. S. Eng., 303 Federal Office Bldg., Nashville 1, Tenn. CD 6/19, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

† **F. H. Martell Co., Inc.,** 1023 20th St. N., W. Wash., D. C. LB $464,000, gun emplacement, FUSE RECOVERY BLDG., fusing house and vacuum house at Naval Proving Ground, NOY 73355, Spec. 34481, DAHLGREN, VA. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash. D. C. Bids June 23 CD 6/18.

Thorington Constr. Co., 2106 N. Hamilton St., Richmond, Va., CA. $374,485, 1 story, brick, concrete masonry Carver Elementary SCHOOL, at HILTON VILLAGE, Lbr. Newport News) VA. Warwick Co. School Bd., Hilton Village, Va. Samuel N. Mayo, Sauer's Bldg., Richmond, Va., archt.

W. A. Simon, Inc., 309½ Marsteller St., Wilmington, N. C., LB Approx. $350,000. CHURCH, WILMINGTON, N. C. Temple Baptist Church, 17 and Market Sts., Wilmington, N. C. Bids June 12. CD 5/28.

A. K. Adams, 542 Plum St. N. W., Atlanta, Ga., CA, $500,000, PLANT addns., ATLANTA, GA. Fulton Bag & Cotton Mills, 170 Blvd. S. E., Atlanta, Ga.

Derby Constr. Co., 4505 Poplar Level Rd., Louisville, Ky. LB $637,000. county high SCHOOL, Florence, BURLINGTON, KY. Boone Co., Bd. Educ., Burlington, Ky. Bids June 10. CD 5/26.

Al J. Schneider Co., 3720 7 St. Rd., Louisville, Ky., LB $726,850. 5 story, 137x194 ft., masonry FACTORY, incl. WAREHOUSE and OFFICE, LOUISVILLE, KY. Stratton & Terstegge Co., 104 N. 15 St., Louisville, Ky. Bids June 20. CD 6/13.

L. A. Warlick Contg. Co., 747 E. 11 St., Chattanooga, Tenn., CA. $510,500, chronic disease wing addn. to HOSPITAL, CHATTANOOGA, TENN. Baroness Erlanger Hospital, c/o Wm. A. Martin, archt., James Bldg., Chattanooga, Tenn. Bids June 10. CD 6/16, under LB.

▲ **S. & W. Constr. Co.,** Shrine Bldg., Memphis, Tenn., LB Approx. $2,500,000. WAREHOUSE, MEMPHIS, TENN. Orgill Bros., 36 W. Calhoun Ave., Memphis, Tenn. Bids June 19. CD 6/3.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲ **O., Cincinnati**—B.A. 7/15—City, City Hall, incinerator, necessary appurtenances, paving app. grading sewer. $1,000,000. Felsberg & Gellespie, Ingalls Bldg., archts. Wm. D. Ehlers, Union Trust Bldg., engr. CD 4/26/50.

BIDS ASKED—BUILDINGS

▲ **Ill., Chicago**—OFFICE—B.A. 7/15—Prudential Life Insurance Co., 763 Broad St., Newark, N. J. substructure only 41 story office bldg. $40,000,000. CD 3/5/51.

Mich., Flint—FIELD HOUSE-GYMNASIUM—B.A. 7/15—Flint Junior College, J. Fred Totten, pres., Flint, 1 and 2 story, 115x135 ft., brick cinder block field house-gymnasium, Oak Grove Campus. $600,000. S. A. Nurmi, 712 W. Court St., archt. Louis C. Kingscott & Assoc., Inc., 511 Monroe St., engrs. CD 2/26.

▲ **O., Cleveland**—HIGH SCHOOL—B.A. 7/21—Bd. Educ., 1380 E. 6 St., Zone 14, 2 story Charles W. Elliott Junior High School, 15700 Lotus Dr. $1,500,000. Plans deposit $10. Arthur F. Baer, c/o owner, archt. CD 6/20.

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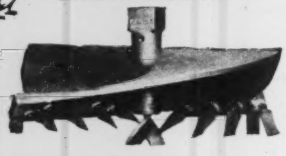

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HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—State Hy. Dpt., T. J. Kauer, dir., Columbus, Zone 15.

Bates & Rogers Constr. Corp., 600 W. Jackson Blvd., Chicago, Ill., CA. **$1,128,849**, est. $1,007,100, b. conc. resurf., b. conc. surf. paving on c. conc. base and construct a continuous steel girder and continuous steel beam bridge with concrete deck and concrete and steel substructure (Spans: girders 90.5 ft., 108 ft., four at 135 and 108 ft.; steel beams, 56 ft., 70 ft., and 56 ft., roadway 28 ft., plus two 4 ft. sidewalks), Bridge No. WA-326-06 over Muskingum River, Gilman and Front Sts., 0.344 mi. SR 326, Sect. 0.00B, U-1059 (1), Washington Co. Bids June 17. CD 6/25, under LB.

▲ **OHIO**—State Hy. Dpt., T. J. Kauer, dir., Columbus, Zone 15.

V. N. Holderman & Sons, Inc., 890 Oakland Park Ave., Columbus, O., CA. **$1,966,811**, est. $2,168,900, c. conc. paving, construct a continuous concrete slab bridge with capped pile substructure (Spans: 28 ft., 35 ft., 28 ft., Rdwys. two at 44 ft.), Bridge No. AL-25-148 over Sugar Creek, pavement two at 24 ft.; roadway 118 ft. and variable 9.332 mi. U. S. R. 25, Sections (8.26-11.80), FI-U-963 (1), Allen Co.; CA **$2,401,800**, est. $2,507,900, c. concr. paving, construct concrete box culvert (two cells at 14 ft. span 7 ft. high x 139.17 ft. long), Bridge No. CO-16-95 over Copperas Run; a continuous concrete slab bridge with concrete piers and capped-pile abutments (Spans: 32, ft., 40 ft., 40 ft., and 32 ft., roadway 56 ft., incl. 4 ft. median and two 6 ft. sidewalks), Bridge No. CO-36-210 over State Rte. No. 16; and a continuous steel girder bridge with concrete deck and substructure (Spans: 78 ft., six at 107 and 78 ft. roadway 56 ft. incl. 4 ft. median and two 6 ft. sidewalks) Bridge No. CO-36-211 over Muskingum River, 3.941 mi. U. S. R. 36, Sect. 20.23; S. R. 16, Section 7.76, F-570 (7), FU-450 (7), Coshocton Co.;

Ralph Myers Contg. Corp., P. O. Box 230, Salem, Ind. CA. **$1,658,835**, est. $1,801,300, c. conc. paving, construct a continuous steel girder bridge with concrete deck and substructure (Spans: 80 ft., three at 100 ft. and 80 ft. roadway 30 ft., plus 1 ft. 9 in. safetty curbs), Bridge No. BR-125-85 over White Oak Creek 3.277 mi. S. R.125, Sections (6.41-9.11), F-116 (2), Brown Co.;

Launder & Son, Inc., Station E. Box 6, Toledo, O., CA **$1,002,650**, est. $955,920, c. conc. paving, construct continuous concrete slab bridge with capped pile piers and abutments (Spans: 28 ft., 35 ft., 28 ft., roadway 44 ft.,) Bridge No. LU-2-318 over Cedar Creek; and a continuous concrete slab bridge with capped pile piers and abutments (Spans: 24 ft., 30 ft., 24 ft., roadway 44 ft.), Bridge No. OT-2-92 over Crane Creek, pavement 24 ft., roadway 44 ft., 6.055 mi., S.R. 2 Sections (31.60-33.39) 0.00, S.R. 579, Section 8.18, F-471 (4), F-219 (2), Lucas and Ottawa Counties Grand total $7,030,096. Bids June 17. CD 6/25, under LB.

▲† **John G. Ruhlin Constr. Co., Inc.**, 1024 Home St., Akron, O., CA. **$1,427,151**. National Guard Air Base at Akron-Canton Airport, incl. hangar, parking apron, taxi strips, warehouse, underground fuel storage, etc., Serial No. ENG 46-022-52-124, AKRON, O. U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va. Bids June 24. CD 6/2.

† **B. G. Danis**, 1518 E. 1 St., Dayton, O., LB **$393,389**. film storage bldg. extens., Wright Patterson Air Force Base, DAYTON, O. U. S. Eng., 830 W. Broadway, Louisville, Ky. Bids June 24. CD 5/19.

INDIANA—State Hy. Comn., State House Annex, Indianapolis, Zone 4.

J. C. O'Connor & Sons, Inc., 2104 Miner St., Fort Wayne, Ind., LB, **$96,936**, est. $99,962 3 rein.-con. bridges over ditches west of State Rd. 49 Rural District, Contract 3465 Porter Co.; LB, **$144,924**, est. $147,911 3 span rein.-con. bridge over ditch, west of State Rd. 49, Contract 3468, Porter Co. Bids June 10.

Louis Easlac, Sebewaing, Mich. and Sam Funk, Winnamac, Ind., CA, **$283,806**, 24 mi. Big Nonon Ditch, INDIANA, Starke, Pulaski and White Counties c o Court House, Winnamac, Ind. Awarded June 19.

INDIANA—State Hy. Comn., State House Annex, Indianapolis, Zone 4.

Calumet Saving Co., Zionsville, Ind., CA, $552,421 grading, levee constr., drainage, c.-conc. paving 1.562 mi. State Rd. 39 from State Rd 67 to State Rd. 37, Morgan Co. Bids June 6, awarded June 20. CD 6/10, under LB.

† **Joseph L. Pohl**, Nevada, Mo., LB, **$333,986**, est. $269,760, levees East Cape Girardeau & Clear Creek Drainage Dist., Proj. Item I B, Alexander Co., ILLINOIS. U. S. Eng., 834 U. S. Court House & Custom House, 1114 Market St., St. Louis, 1, Mo. Bids June 24. CD 6/19.

† **J. S. Alberici Constr. Co., Inc.**, 1550 Irving Ave. St. Louis, 20, Mo., LB, **$358,543**, Wood River Pumping Station, Wood River Drainage and Levee District Proj. Item 111-C, CIVENG 23-085-52-96, ILLINOIS. U. S. Eng., 834 U. S. P. O. & Custom House 1114 Market St., St. Louis, 1, Mo. Bids June 23. CD 6/17.

MICHIGAN—State Hy. Dpt., 222 Townsend St., Lansing, Zone 13.

Lewis & Frisinger Co., 214 E. Madison St., Ann Arbor, Mich. CA **$976,261**, est. $1,000,000. concrete dual road, service road relocation 10.583 mi. of US-12, FI 38-48-C7 (FI 408 11), Jackson Co. CD 6/17, under LB.

MICHIGAN—State Hy. Dpt., 222 Townsend St., Lansing, Zone 13.

Ann Arbor Constr. Co., 221 Felch St., Ann Arbor, Mich. CA **$581,969**, est. $590,000. b. conc.-surf. Class I 16.94 mi. US112, M 46-4 C20, M 81-5 C14,

Lenawee and Washtenaw Counties;
Walter Knapp Co., Monroe, Mich. CA $814,499, est. $780,000. c. conc. 7.116 mi. M-50, F 46-31 C7 (F 44 8); F 46-9 C7 (F 44 6), M 46-9 C9, M 46-31 C6, M 46-31 C8, Lenawee Co. CD 6/17, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Leo W. Schmidt Co., 9920 Granger Rd., Cleveland, O., CA. $810,305. general constr. 2 story brick, stone SCHOOL, known as Mercer Elementary School, Wimbledon and Hardwick Rds., SHAKER HEIGHTS, O. Bd. Educ. S. Woodland and Woodbury Sts., Shaker Heights, O. Bids June 20. CD 6/26, under LB.

† **Sullivan & Cozart, Inc.**, 822 W. Kentucky St., Louisville, Ky., CA, $599,800, parachute repair SHOP, Jeffersonville QM. Depot, JEFFERSONVILLE, IND. U. S. Eng., 830 W. Broadway Louisville, Ky. Bids June 17, awarded June 20. CD 6/25, under LB.

▲ **Barton-Malow Co.**, 2631 Woodward St., Detroit, Mich. CA $1,400,000. SHOPPING CENTER, incl. 2 story, brick, concrete OFFICES and STORES, E. Maple St., BIRMINGHAM, MICH. Carl O. Barton, 2631 Woodward St., Detroit, Mich. (Correction—Cost.) CD 6/6, under CA.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Neb., Fort Crook**—DORMITORIES—B.A. 7/17—U. S. Eng., 1709 Jackson St., Omaha, two 3-story, 37x220 ft. concrete frame with masonry panels dormitories; one 1-story, 98x113 ft. with 42x69 ft. wing masonry mess and admin. bldg.; approx. 4,000 sq. yd. flexible pavement for drives and parking areas; misc. utility connections, walks, seeding, etc. Offut Air Force Base, Spec. No. ENG 25-066-52-130. CD 6/25.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Iowa Road Building Co., Fairmont, Minn., CA. $240,796. grading various roads in county, ALGONA, IA. Kossuth Co., c/o County Bd. Supervs., Algona, Ia.

† **Jensen & Krage**, 2220 Hawkeye Dr., Sioux City, Ia., LB, $329,939, rehabilitation of runways, taxiways, aprons, roads, utilities, runway marking at Sioux City Municipal Airport, Inv. 52-100, SIOUX CITY, IA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids June 3. CD 5/14.

† **Lohr Bros.**, Columbia, Ill. LB. $318,000, est. $269,069. 11,245 lin. ft. earthen levee, levee enlargement, 36 in. gravity drainage structure on east bank of Mississippi River miles 98 to 103 above mouth of Ohio River in Perry Co. Levee Dists. 1, 2 and 3, Proj. Item IV-B Perry Co., CIVENG 23-065-52-106, MISSOURI. U .S. Eng., 834 U. S. Court House & Custom House, 1114 Market St., St. Louis 1, Mo. Bids June 24. CD 6/4.

P. C. Sorenson, 2203 S. Industrial Blvd., Dallas, Tex. CA. $705,865, completing all sanitary sewer work in Mill Creek Sect., DALLAS, TEX. City Hall, Main and Harwood Sts., Dallas, Tex. Bids June 3. CD 6/11, under LB.

Brown & Root, Inc., Box 3, Houston, Tex., CA. Approx. $550,000. water pumping unit and large main to carry water from Colorado River to chemical plant, 8 mi. northwest of SEADRIFT, TEX. Carbide & Carbon Chemicals Co. Div. of Union Carbide & Carbon Corp., N. Esperson Bldg., Houston Tex. CD 1/29.

▲† **Marye-Northwestern Co.**, 1300 Cherokee St., Denver, Colo., CA. $1,171,417, academic hangar at Lowry Air Force Base, Inv.-52-96, DENVER, COLO. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids June 18. CD 6/24, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

The Kloster Co., 4607 Beck Ave., St. Louis, 16, Mo. CA. $300,000. 2 story, brick, rein.-con. CHURCH and PAROCHIAL SCHOOL, 4100 Blow St., ST. LOUIS, MO. Immaculate Heart of Mary Catholic Parish, c/o Rev. Joseph Dwyer, pastor, 4101 Robert Ave., St. Louis 16, Mo. Bids June 13. CD 5/28.

Hardesty-Johnson, Builders, Inc., 14 S. Central St., Clayton 5, Mo. Owner Builds. $400,000. 53 RESIDENCES, Belmont Hills Subdivision 3, UNIVERSITY CITY (ST. LOUIS 5, P.O.), MO.

▲ **Brown & Root, Inc.**, P.O. Box 3, Houston, Tex., CA. $8,574,799, addnl. PLANT constr. near DAINGERFIELD, TEX. Lone Star Steel Co., W. Mockingbird Lane and Roper Sts., Dallas, Tex. CD 6/23.

▲ **Walter Kidde Constructors**, 576 Main St., Belleville, N. J., CA. $4,500,000. design and construct 130,000 sq. ft. tool mfg. PLANT, FORT WORTH, TEX. Chicago Pneumatic Tool Co., 6 E. 44 St., New York, N. Y. Bids May 29. CD 5/27.

▲† **Olson Constr. Co.**, Railway Exchange Bldg., Denver, Colo., CA. $3,920,000. National Bureau of Standards LABORATORIES, BOULDER, COLO. National Bureau of Standards, 19 and F Sts. N.W., Wash., D. C. Bids May 22. CD 5/27, under LB.

▲† **Swinerton & Walberg Co.**, 2040 S. Navajo St., Denver, CA. $1,160,268, WAREHOUSES and CHANGE HOUSES at Rocky Mountain Arsenal, Inv. 52-1281, DENVER, COLO. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids June 17. CD 6/24, under LB.

FAR WEST

BIDS ASKED—BUILDINGS

▲ **Calif., San Francisco**—UNDERGROUND GARAGE—B.A. 8/2—City and San Francisco Co., Office of Parking Auth., 500 Golden Gate Ave., underground

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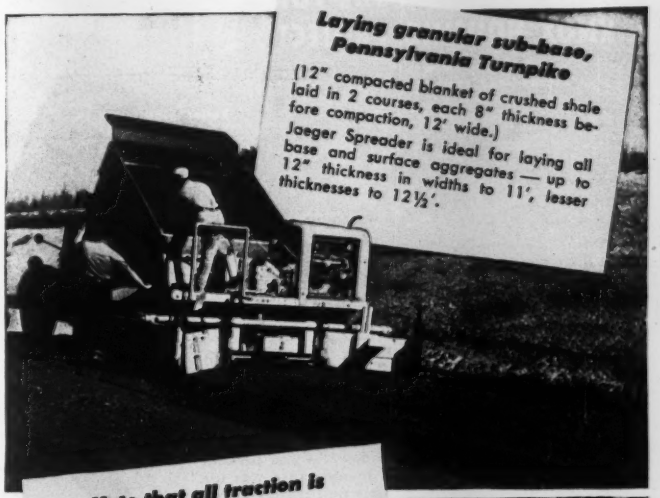
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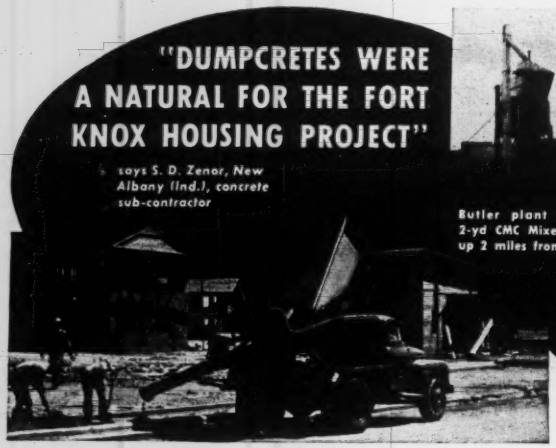

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It will pay you to investigate the advantages of the Franki Displacement Caisson. It has been used successfully in 36 countries under a wide variety of soil conditions. Typically, single caisson loads are 100 tons.

Write for information about the construction method, advantages, tests and typical installations of the Franki Displacement Caisson.

Excavated Franki Displacement Caisson. Enlarged base and 21" diameter shaft formed by ramming concrete into soil. Soil is displaced and compacted—not excavated.

FRANKI FOUNDATION COMPANY
436 Seventh Avenue Pittsburgh 19, Pa.

garage beneath St. Mary's Square, $2,000,000. Bidders will submit own designs in accordance with certain basic, struct. requirements. Plans deposit $25. Wilson & King, 1045 Sansome St., engrs. Bids 11/9/51, rejected. CD 11/15/51, under LB.

Ore., Portland—TEACHING HOSPITAL—B.A. 8/13—Oregon Bd. Higher Educ., Eugene, teaching hospital, University of Oregon Medical School. Plans deposit $200. Extended date. Lawrence, Tucker & Wallman, Failing Bldg., archts. CD 6/6.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

ARIZONA—State Hy. Dpt., 17 Ave. and Jackson St., Phoenix,

W. J. Henson, Box 471, Prescott, Ariz., CA, **$315,430,** resurf. existing bit. 6.5 mi. plant mix bit. stabilized base and bit. plant mix, Flagstaff-Winslow Highway, Navajo Co. Awarded June 17.

N. Fiorito Co., 844 W. 48 St., Seattle, Wash., LB **$230,646,** repaving 1,500 lin. ft. runway at Boeing Field, SEATTLE, WASH. King Co., County-City Bldg., Seattle 4, Wash. Bids June 23. CD 6/13.

OREGON—State Hy. Comn., Highway Bldg., Salem,

C. R. O'Neil, Cresswell, Ore., CA, **$697,645,** grading, paving 4.39 mi., Oregon Coast Hy. FAP 8F-141 (13), Coos Co. Bids Apr. 21, awarded June 17. CD 4/29, under LB.

▲† **Woodward Governor Co.,** 5001 N. 2 St., Rockford, Ill. LB **$1,017,491,** ten 111,300 hp. hydraulic turbine governors and accessories for Units 5 to 14 inclusive, McNary Dam, Inv. 52-111, OREGON. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids June 24. CD 5/28.

CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles,

Oberg Bros. Constr. Co., Box 649, Inglewood, Calif., LB, **$352,246,** 2 rein.-con. bridges, grading, paving streets, Harbor Freeway 11 and 12 Sts., Los Angeles Co. Bids June 19. CD 5/6.

CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacramento,

Dan Caputo & Ed Keehle, 2711 Moorpark Ave., San Jose, Calif., CA, **$984,046,** road construction 1.6 mi. constr. 2 rein.-con. bridges, etc. between Alisal Rd. and Salinas, Montrey Co. Bids May 28, awarded June 19. CD 6/6, under LB.

CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacramento,

Granite Constr. Co., Box 900, Watsonville, Calif., CA, **$674,331,** wid'n. lanes, surf 9 mi. between Templeton and Paso Robles, San Luis Obispo Co. Bids June 4. CD 6/10, under LB.

CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles,

H. C. Soto Corp., 13000 S. Avalon St., Los Angeles, Calif., LB, **$96,074,** prepare roadside and planting 2 mi. Virginia Ave. to Los Angeles St., Los Angeles Co.;

G. W. Ellis Constr. Co., 8240 Lankershim Blvd., North Hollywood, Calif., LB, **$217,987,** wid'n., surf. 26.7 mi. hy. between Cronise Valley and 3 mi. west of Halloran, San Bernardino Co.;

R. E. Hazard, Box 1951, San Diego, Calif., LB, **$101,291.** surf 7.6 mi. Balboa Ave. Las Flores, San Diego Co.;

Cox Bros. Constr. Co., Box 46, Stanton, Calif., LB, **$216,962,** grading, surfacing, etc. 3.2 mi. Rt. 77 at Miramar, San Diego Co. Bids June 19. CD 5/26.

CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacramento,

Pike & Hill, Carey Bros. & Bailey, P.O. Box 569, San Rafael, Calif., LB, **$241,728,** surf. 2 mi. between NWP underpass and Elven Oaks, Mendocino Co.;

Frederickson & Watson Constr. Co., 873 81 Ave., Oakland, Calif., LB, **$310,747,** road surf., etc. 5.6 mi. south of Merced, Merced Co.;

Ukropina-Polich & Kral, Box 425, Baldwin Park, Calif., LB, **$188,365,** roadbed, drainage 17 mi. West Sacramento Freeway near Tower Bridge, Yolo Co. Bids June 18. CD 5/26.

† **Ben C. Gerwick, Inc.,** 112 Market St., San Francisco, Calif., LB, **$358,733,** seaplane dock at U. S. Naval Air Station, NOY 72358, ALAMEDA, CALIF. Twelfth Naval Dist., San Bruno, Calif. Bids June 18. CD 6/4.

† **The Contracting Engineers Co.,** 2310½ W. Vernon Ave., Los Angeles, Calif., LB, **$331,402,** dormitories at Oxnard Air Force Base, ENG 04-353-52-62, OXNARD, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 17. CD 5/22.

▲† **MacDonald & Kruse,** 816 S. Allen St., Glendale, Calif., LB **$1,195,000,** Runway 3-21 at test center, Spec. 31553, POINT MUGU, CALIF. Naval Air Missile Test Center, Point Mugu, Calif. Bids June 19. CD 6/3.

▲† **McDonald Bros.,** 6014 W. Adams Blvd., Los Angeles, Calif., CA, **$1,148,770,** test and evaluation bldg., storehouse, NOY 73454, Spec. 34566, POINT MUGU, CALIF. U. S. Naval Air Missile Test Center, Point Mugu, Calif. Awarded June 18. CD 7/23/48.

Chas. L. Harney, Inc., 575 Berry St., San Francisco, Calif., LB, **$298,165,** resurfacing San Jose Ave. between Randall and Monterey Sts., SAN FRANCISCO, CALIF. City Dpt. P. Wks., City Hall, San Francisco, Calif. Bids June 18. CD 6/6.

▲ **Bent Constr. Co. and Daley Corp.,** Box 67, North Park Station, San Diego, Calif., CA, **$2,896,485,** completion of Sutherland Dam multiple arch, rein.-con. structure on Santa Ysabel Creek, SAN DIEGO, CALIF. City Council, Civic Center, San Diego, Calif. Bids June 10. CD 6/16, under LB.

Piombo Constr. Co., 1571 Turk St., San Francisco, Calif., LB, **$458,428,** remove tracks, paving Turk,

(Continued on page 116)

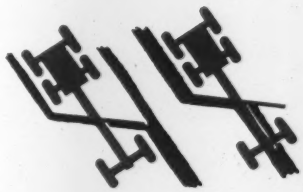
This A-W Grader Sure Handles Oil Mix FAST!

"I take off my hat to All-Wheel Drive and All-Wheel Steer."

Whenever you see an Austin-Western Power Grader with its rear end off-set like this, you can be sure that it is moving more material farther and doing the job faster than an ordinary motor grader could do it. We call it "CONTROLLED TRACTION." Here's how it works:

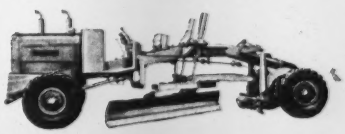
All wheels miss the windrow. The rear drivers push behind the toe of the blade; the front drivers pull ahead of the heel of the blade, and the grader moves straight ahead with a load along the entire blade that would cause an ordinary motor grader to become unmanageable.

PRECISION SIDESHIFT moves the blade in or out, as desired, while the grader is in motion. Ample throat room between top of blade and bottom of circle makes it possible to move a tremendous windrow without interference. The lay-down is handled with the precision that satisfies the most critical engineer.



On the ordinary motor grader, the operator has two alternatives; split the windrow and move less material, or straddle the windrow and not move it the full distance. Each of these procedures slows down the job.

CONTROLLED TRACTION puts the rear end of the machine where it will most effectively resist the side-thrust of the load on the blade . . . saves time and money on a wide variety of grading and ditching jobs. Only Austin-Western has CONTROLLED TRACTION . . . because only Austin-Western has All-Wheel Drive and All-Wheel Steer.

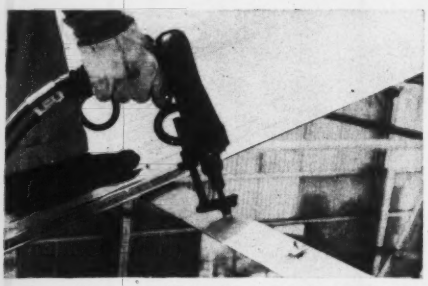


AUSTIN-WESTERN COMPANY · *Subsidiary of Baldwin-Lima-Hamilton Corporation* · **AURORA, ILLINOIS, U.S.A.**

BALDWIN BLH LIMA-HAMILTON

IT PAYS TO GO NELWELD!

IN APPLYING CORRUGATED METAL ROOFING AND SIDING



NELWELD IS FASTER!

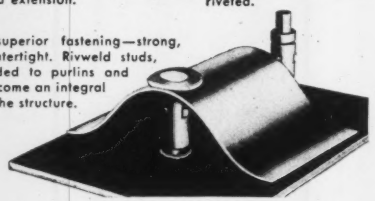
1 In a split-second, a Nelson Rivweld stud is end-welded to purlin or girt. Lightweight Nelweld gun is easy to handle.

2 Corrugated sheet is readily impaled over Rivweld stud extension.

3 Burr is placed over stud extension which is then riveted.

NELWELD IS BETTER!

Here's superior fastening—strong, neat, watertight. Rivweld studs, end-welded to purlins and girts, become an integral part of the structure.



•Both owner and contractor fare better when the Nelweld topside method is used to apply corrugated steel, aluminum or protected metal roofing and siding. Owners get sounder construction—permanently strong, neat fastening and minimum maintenance cost. Sheeting contractors benefit in faster, cost-saving application . . . the elimination of all interior scaffolding . . . higher employee morale . . . well satisfied customers.

Get additional facts about Nelweld for applying corrugated metal roofing and siding by writing Lorain, Ohio, or contact the Nelson office in your area. Nelson approved applicators are located throughout the country.

Nelson Rivweld Studs are distributed by: United States Steel Supply—Southern States Iron Roofing Co.—Reynolds Metals Co.—Aluminum Company of America.

Fasten it Better...at Less Cost, with NELWELD

NELSON STUD WELDING

DIVISION OF GREGORY INDUSTRIES, INC., LORAIN, OHIO

(Continued from page 114)

Eddy and Mason Sts., SAN FRANCISCO, CALIF. Dpt. P. Wks., City Hall, San Francisco, Calif. Bids June 18.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Theo. G. Meyer & Sons,** 200 Quint St., San Francisco, Calif., LB, **$1,560,287,** Bernal Dwellings, HOUSING Proj. Cal 1-5, at Army, Harrison 26 and Folsom Sts., SAN FRANCISCO, CALIF. Housing Auth. of City and San Francisco Co., 440 Turk St., San Francisco, Calif. Bids June 17. CD 5/22.

▲† **Rothschild, Raffin & Weirick & Jas. I. Barnes Constr. Co.,** 299 Kansas St., San Francisco, Calif., CA, **$4,418,300,** 6 story, rein.-con. structural stel LABORATORY Bldg. 815 at Navy Radiological Defense Laboratory, San Francisco Naval Shipyard, NOY 72363, Spec. 32780, SAN FRANCISCO, CALIF. Twelfth Naval Dist. P. Wks. Office, San Bruno, Calif. Bids June 4, awarded June 20. CD 6/19, under LB.

S. J. Amoroso Constr. Co., 2100 Oakdale Ave., San Francisco, Calif., LB, **$782,434,** Girls HIGH SCHOOL addns., SAN FRANCISCO, CALIF. Dpt. P. Wks. City Hall, San Francisco, Calif. Bids June 18. CD 5/22.

CANADA

BIDS ASKED—BUILDINGS

Newfoundland, St. John's—HOUSING—B.A. 7/15—Central Mortgage & Housing Corp., 1032 Gottingen St., Halifax, N. S. 100 unit housing, $800,000. Plans deposit $100. C. J. Connolly, c/o owner, regional engr.

▲ Ont., Sarnia—HOUSING—B.A. 7/15—Central Mortgage & Housing Corp., 115 N. Russell St., 250 houses in Sarnia District for defense workers, $2,000,000, M. A. MacIntosh c/o owner, mgr. CD 8/7.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

BRITISH COLUMBIA—Province of B. C., Douglas Bldg., Victoria.

Campbell-Bennett Ltd., 1718 W. 5 Ave., Vancouver, B. C., LB $821,607, constr. Victoria to Parsons-Bridge section of Trans-Canada Highway. Bids June 20. CD 6/13.

BUILDINGS

LOW BIDS AND CONTRACTS

Vancouver Associated Contractors, Ltd., 815 W. Hastings St., Vancouver, B. C., CA, **$683,798** 91 new DWELLINGS in Fraserview Housing Development Proj. 6-Z-6, VANCOUVER, B. C. Central Mortgage & Housing Corp., 360 Hilmer St., Vancouver, B. C. Bids June 10, awarded June 18. CD 5/22.

▲ **Commonwealth Constr. Co. Ltd.,** 700 Taylor St., Vancouver B. C., CA, **$1,000,000,** rebuild dock and part of GRAIN ELEVATOR, VANCOUVER, B. C. United Grain Growers, north ft. Vernon Dr., Vancouver, B. C. Awarded June 19.

Commonwealth Constr. Co., Ltd., 700 Taylor St., Vancouver, B. C., CA, **$500,000** 1 and part 2 story rein.-con. BUS TERMINAL and OFFICE bldg., NEW WESMINSTER, B. C. British Columbia Electric, 425 Carrail St., Vancouver, B. C. P. C. Underwood, 1264 W. Pender St., Vancouver, B. C., archt. Awarded June 18. CD 1/8.

James Kemp Constr., 121 Vansitmart St., Hamilton, Ont., CA, **$620,000,** 1 story, 262x357 ft., rein.-con. SCHOOL, ST. CATHERINES, ONT. St. Catherines Bd. Educ., 15 Welland Ave., St. Catherines, Ont. Bids June 16, awarded June 24. CD 6/2.

PROPOSED PROJECTS

WATER SUPPLY

Ark., Little Rock—Bd. Water Works, constr. auxiliary reservoir and plant, main feeder line $850,000. L. A. Jackson, Robinson Auditorium, Little Rock, consult. engr. CD 12/2/49.

Mass., Dartmouth—Town, Bd. Water Conn., Town Hall, water exten. $200,000, Fay, Spofford & Thorndike, 11 Beacon St., Boston, consult. engrs.

O., Akron—City, City Hall, water distr. imprvs. in Kenmore Dist., crosstown main and more pumps. $500,000. Wendell R. LaDue, water supt.

Ont., Oshawa—Public Utilities Comn., Oshawa, water mains extensions and imprvs. to pumping station and intake system 10 and 12 in. mains, 36 in. intake pipe. Approx. $732,000. CD 8/8/51.

SEWERS, WASTE DISPOSAL

Ark., Nettleton—City, Nettleton, sewerage system and disposal plant, $295,000. Watson Hall, 5691 Country Club Rd., Little Rock, consult. engr. CD 123/46.

Calif., Almonte—Almonte Sanitary Dis., Almonte voted $250,000 bonds, sewerage system. John S. Bates, 3134 Eton St., Berkeley, consult. engr.

Calif., Marysville—City, City Hall, defeated $250,000, bonds, installing 2 pumping stations in East Marysville area and 3/4 mi. pipeline. Philip J. Diver, Jr., City Hall, city engr. CD 5/16.

Mass., New Bedford—City, P. Wks. Dpt., outfall sewer, second outfall pipe exten. 3,300 ft. in Buzzards Bay, $700,000; rehabilitation of New Howland St. station, intercepting sewerage sys. pumps, gate valve Belleville Ave. station, repair sluice gate, constr. energy overflow repairs at Cove Rd. station, retaining wall, stop

gate at Apponagansett station, $350,000, Fay, Spoffard & Thorndike, 11 Beacon St., Boston, consult. engrs. CD 2/20.

Mich., Ovid—Ovid Village, sewerage sys., sewage disposal plant, sewers. $425,000.

▲ **O., Athens**—City Council, City Hall, sanitary sewers, sewage plant, $1,100,000. CD 12/19/45.

▲ **O., Columbus**—Comrs. Franklin Co., Court House, City (Metropolitan Committee) City Hall, expand Jackson Park Sewage disposal plant to increase capacity to 80 m.g.d., $3,600,000; new sewage plant on Alum Creek to handle 20 m.g.d., $4,500,000-$5,000,000. Orris Bonney, Court House, ch. engr., Div. Sewers & Drains.

Va., Pearisburg—Town Council, Floyd Jennings, town mgr., sewage plant. $240,000.

▲ **Ont., Sarina**—City, sewage disposal plant, $2,000,000 E. R. Cotter & W. Greenwood, c/o owner, engrs. James F. Maclaren Assocs., 705 Yonge St., Toronto, consult. engrs. CD 3/13.

BRIDGES

La., Shreveport—City, underpass on Lake Shore under Kansas City Southern Ry. $300,000, E. M. Freeman & Assoc., Continental-American Bldg., consult. engrs.

Tex., Sherman—City, voted bonds, bridge constr. $108,220; underpass, $545,241. CD 6/3.

STREETS AND ROADS

▲ **GEORGIA**—State Hy. Dpt., Atlanta,
Fulton and Spaulding Counties—four-lane highway from Atlanta to Griffin, Approx. $3,000,000.

Kan., Kansas City—City Comrs., c/o Mayor Clark E. Tucker, repair, imprv. arterial trafficways, Woodswether and Central Industrial Dist. (Kansas side). $800,000. CD 6/12/46.

Mo., St. Louis—City, Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, 12 and Market Sts., Zone 3, roadways along edge of open channel of River des Peres sewerage sys. $600,000. Guy Brown, 325 City Hall, Zone 3, ch. engr.

Pa., Sharon—City, City Hall, street paving program. $200,000.

EARTHWORK, WATERWAYS

▲ **Kentucky and Indiana**—U. S. Eng., 830 W. Broadway, Louisville 1, Ky., Fernbank Locks and dam in Ohio River at site Dam 39 at Warsaw, Gallatin Co., Ky. and Markland, Switzerland Co., Ind. $50,000,000. $100,000 allotted for survey which is underway.

AIRPORTS

▲ **Ariz., Tucson**—TERMINAL BLDG.—City of Tucson Airport Auth., Tucson, terminal bldg., control tower, Tucson Municipal Airport, $3,500,000.

N. C., Raleigh-Durham—TERMINAL—Raleigh-Durham Airport Auth., Raleigh, plans by George Watts Carr, Durham, passenger terminal. $500,000. Wm. C. Olsen, No. 5 Exchange Pl., Raleigh, consult. engr. CD 1/9/45, under N. C., Durham.

▲† **S. C., Beaufort**—LANDING FIELD—P. Wks. Office, U. S. Navy, Box 365, Naval Base, Charleston, Marine Corps Auxiliary landing field imprvs. $3,734,000. CD 9/19/51.

▲† **Tex., Abilene**—AIR BASE—U. S. Eng., 100 W. Vickery St., Fort Worth, misc. airfield bldgs. and facilities, $4,000,000; area pavement, $1,000,000; liquid fuel storage, $500,000; fueling sys., $600,000; communications, $750,000; airfield lighting $150,000; navigation aids, $400,000; shops, $4,500,000; water lines, facilities, $75,000; sewers, $90,000; gas sys., $75,000; roads, $100,000; runways, $3,000,000; taxiways, aprons, $1,000,000; operational facilities, $1,000,000; aircraft maintenance facilities, $2,000,000; general storage, $5,000,000, at Tye Field Air Force Base. CD 1/23.

Wyo., Cheyenne—RUNWAY—City, defeated $200,000 bonds airport runway extensions.

T. H., Honolulu—LIGHTING—Dpt. P. Wks., Honolulu 10, T. H. medium intensity lighting at Honolulu International Airport. $299,860. CD 1/28.

LATIN AMERICA

Mexico, Acapulco—FACTORY—Idbulio Fernandez, Acapulco, Gro., plans ice factory. $500,000.

▲ **Mexico, Salina Cruz**—FACTORY—Kawasaki Rolling Stock Mfg Co., A. Turo, 20 de Noviembre, 26, Mexico City, plans railroad car, fertilizer, insecticides factory. $17,500,000. Masao Ueda, c/o owner, consult engr.

PUBLIC BUILDINGS

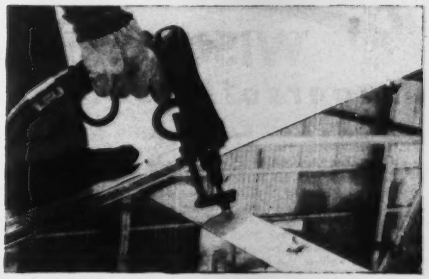
▲ **Colo., Denver**—SCHOOLS—School District 1, 414 14 St., bond election Oct. 6, 12 new schools and altering 16 schools, $25,000,000.

Ga., Gainesville—SCHOOL—City and Hall Co., Gainesville, Consolidated Negro School. $500,000.

Ind., Connersville—SCHOOL ADDN., etc.—Bd. School Trustees, Connersville, plans by W. Erb Hanson, 621½ Central Ave., 3 story, 90x183 ft., brick rein.-con. Junior High School addn., annex, and remodeling, $400,000.

IT PAYS TO GO NELWELD!

IN APPLYING CORRUGATED METAL ROOFING AND SIDING



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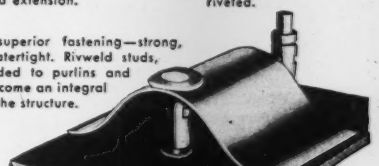

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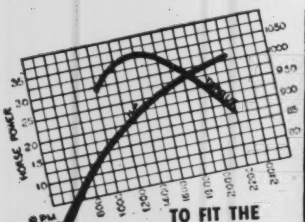
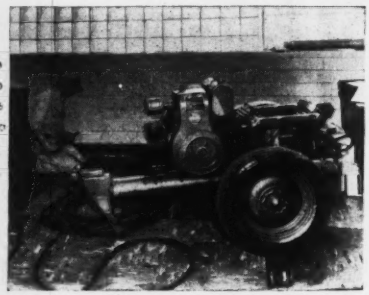
USS

UNITED STATES STEEL



TO FIT THE MACHINE AND THE JOB

Power



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Ingersoll-Rand Compressor

Wheeling a modern, mobile compressor to any spot it's needed is easy when it's an Ingersoll-Rand. Then doing a day's work on *location* is also a "sure thing" if a Wisconsin Heavy-Duty Air-Cooled Engine supplies the power.

The search for full-rated power that's dependable ends almost always with Wisconsin Engines . . . *first choice everywhere*, 3 to 30 hp. For example, every Wisconsin Engine crankshaft rides at both ends on tapered roller bearings, reducing the chance of bearing failure. Also, Wisconsin Engine magnetos mount on the OUTSIDE for easy servicing, but most important each magneto is equipped with an impulse coupling for quick starts in any weather. Steady running is assured, too, because of fool-proof air-cooling, summer and winter. Follow the lead of many who say, "Wisconsin Engine Power fits the machine and job." And, write today for "Power Magic" covering all 4-cycle single-cylinder, 2-cylinder and V-type 4-cylinder models, 3 to 30 hp.

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World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46 WISCONSIN

"GUNITE" CONCRETE (Since 1915)

FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS, TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING

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District Branch Offices

Paul B. Watts, 228 N. LaSalle St., Chicago 1, Ill.
George R. Lewis Co., 2036 Queen Ave. S., Minneapolis 5, Minn.
B. H. Mueller Co., 8625 Delmar Blvd., St. Louis 5, Mo.
Ole K. Olsen Co., 823 Perdido St., New Orleans, La.
Philip D. Barnard, 2036 Addison, Houston 5, Tex.
Western Steel Prod. Co., 1755 W. 13th Ave., Denver 4, Colo.

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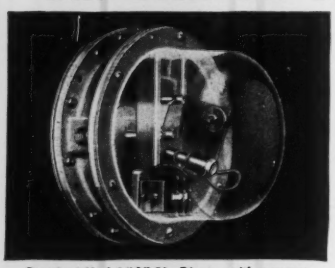

Standard Model "A" Bin-Dicator with mercury switch for materials weighing 30 lbs. or more per cubic foot.

Diaphragm-operated switch in sealed housing mounts (externally or internally on bin, hopper, screw conveyor. Signals change in level, automatically starts and stops filling and emptying equipment as level of material changes. Practical on bulk materials weighing 4 to 350 pounds per cubic foot. Standard with mercury switch; special units with Micro switch and for hazardous locations.

We will gladly mail detail data.

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13946-P1 Kercheval • Detroit 15, Michigan

Me., Scarborough—SCHOOL—Town, School Bldg. Comn., plans by Wadsworth Boston & Tuttle, 57 Exchange St., Portland, high school, convert present high school into Junior High School, $400,000. CD 5/8.

Mass., Belchertown—SCHOOL—Town, Supt. Schools, school, S. Main St. $500,000.

Mass., Great Barrington—SCHOOL—Town Kenneth F. Preston, supt. schools, Leo Wells, chm. Bd. Educ., Town Hall, high school, $500,000.

Mass., West Newbury—SCHOOL—Town, School Dpt., c/o Supt. Schools, high school, $500,000.

▲ Miss., Indianola—PLANT—City, voted $1,295,000 bonds, plant for Ludloy Sales & Mfg. Co. CD 6/13.

▲ Neb., Lincoln—AUDITORIUM—City, City Hall, defeated $750,000 bonds municipal auditorium, $2,500,000. Will revise plans. Davis & Wilson, 225 Stuart Bldg., Meginnis & Schaumberg, 614 Federal Security Bldg. and Bruce Hazen, 305 Stuart Bldg., archts. CD 5/16.

Nev., Reno—STUDENT UNION—University of Nevada, Reno, plans by Ferris & Erskine, 577 LaRue St., student union bldg. $600,000. CD 2/21/45.

N. H., Dover—HOSPITAL—City, City Mgrs. Office, City Hall, plans by Irving W. Hersey & Assoc., Dover Rd., Durham, Dover City Hospital and Wentworth Hospital alterations, Fed. Proj. NH 27-E59. $750,000. CD 8/4/50.

▲ N. Y., Bellerose—SCHOOL—Bd. Educ., 49 Flatbush Ave. exten. Brooklyn, Zone 1, plans by Michael Radoslovich, 304 Burns St., Forest Hills, P.S. 191, east side of 258 St. south of East Williston Ave. $1,120,000.

▲ N. C., Fayetteville—HOSPITAL—Cumberland Co., Fayetteville voted bonds, hospital $1,150,000. CD 5/5.

▲ N. C., Fayetteville—SCHOOL—Cumberland Co., Fayetteville, voted bonds, school imprvs., $2,350,000. CD 5/5.

▲ N. C., Wilmington—SCHOOL—New Hanover Co. Bd. Educ., Court House, voted bonds school imprvs. $2,993,000.

▲ Tex., Corpus Christi—SCHOOLS—Corpus Christi Independent School Dist., 515 N. Carancahua St., voted bonds, enlarging Southside School $325,000; enlarging Central School, $300,000; Wynne Seale School expansion and remodeling, $375,000; Cliffside School remodeling and enlarging, $350,000; Driscoll Junior School enlargement and remodeling, $400,000; Ebony Acres Elementary School, $365,000; some school general remodeling and addns., $385,000.

▲ Tex., Laredo—SCHOOLS—Laredo Independent School Dist., Laredo, plans by Caudill, Rowlett, Scott & Assoc., engrs.-archts., Box 1351, College Station, Job. No. 1, elementary school, $300,000; Job No. 2, elementary school, $300,000; Job No. 3, elementary school, $300,000; Junior-Senior High School unit, $325,000; school remodeling, $325,000. CD 11/20/51.

▲ Tex., San Antonio—GARAGE—Bexar Co., Court House, auto parking garage, in area near court house. $4,000,000. L. White, co. engr.

Tex., San Antonio—HIGH SCHOOL—San Antonio Independent School Dist., Lavaca and Matagorda Sts., plans by Phelps & DeWees & Simmons, 1501-6 Majestic Bldg. 1,000 student capacity Junior High School, Zachary Rd. and Sunshine Dr. in northwest sect. of city, $350,000. CD 6/23/50.

▲ Tex., Victoria—SCHOOLS—Victoria Independent School Dist., Victoria, bond election Sept. 20, 30-station Junior High School, $475,000. Granger & Fehr, 502 E. 5 St., Austin, archts.; 15-room elementary school on 10-acre site, $300,000, Arne G. Engberg, 3910 Fannin St., Houston, archt; elementary school, $325,000, Jordan C. Ault & Assoc., Victoria, archts. CD 6/19.

Va., Manassas—HIGH SCHOOL—Prince William Co. School Bd., Manassas, plans by John M. Walton & Assoc., 2049 15th St. N., Arlington, 2 story brick, concrete, masonry Gar-Field High School at Dumfries. $600,000. CD 4/17.

▲ Va., Norfolk—SCHOOLS—Norfolk Co. School Bd., 148 Granby St., plans by J. Binford Walford & O. Pendleton Wright, 103 E. Cary St., Richmond, 2 brick, concrete wasonry elementary schools, near here, $500,000 each; 1 and 2 story, brick, concrete masonry Norfolk County High School, $1,400,000; 1 and 2 story, brick, concrete masonry Churchland High School, at Churchland, $1,400,000.

▲ Wash., Seattle—SCHOOLS—School District 1, 815 4th Ave. N., plans by J. W. Maloney, Central Bldg., Zone 4, Meany Junior High School addn., $650,000; plans by Mallis & De Hart, Lyon Bldg., Seattle, Zone 4, Junior High School addn. to Cleveland High School, $350,000; plans by Naramore, Bain, Brady & Johnson, 904 Arctic Ave., junior high school addn. to Queene Anne High School, $750,000; plans by Jones & Bindon, Hoge Bldg., Zone 4, Dunlap Elementary School addn., $300,000; plans by T. Damm, 516 James St., Alki Elementary School addn., $375,000.

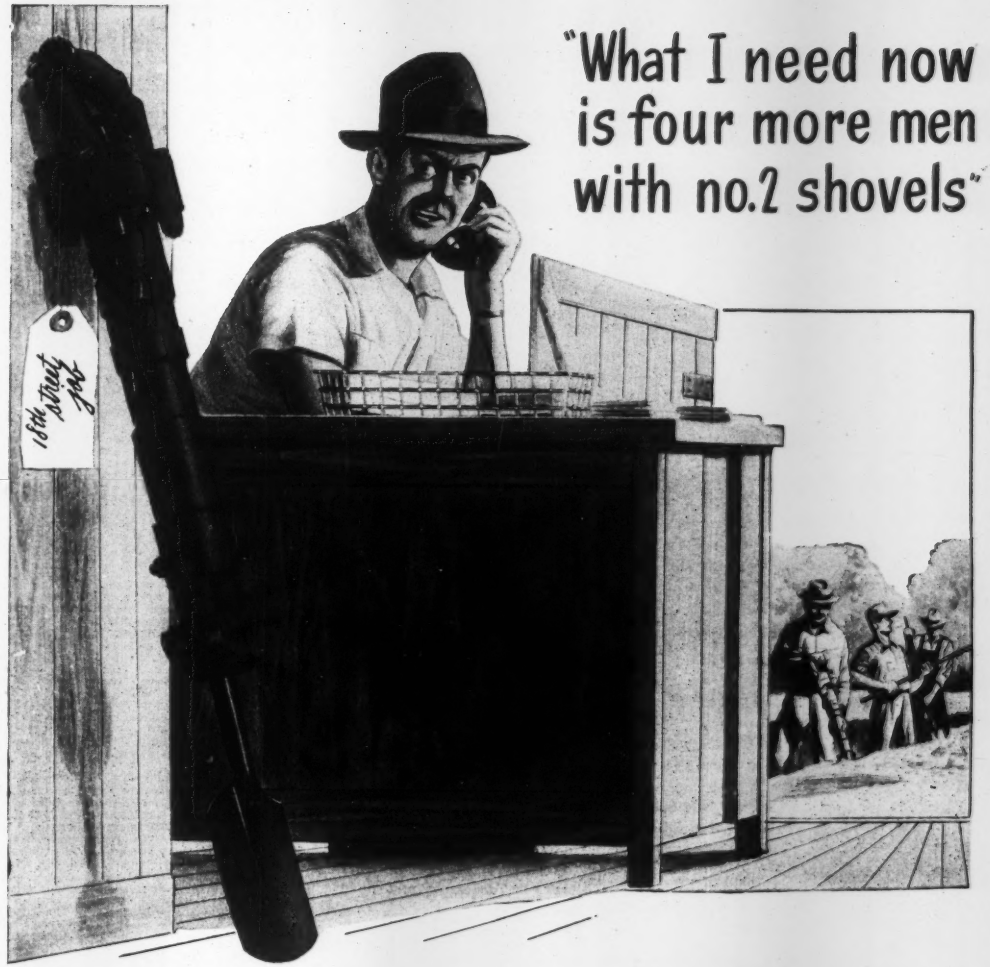
Wis., Green Bay—VOCATIONAL SCHOOL—State Dpt. P. Welfare, Madison, plans by Roger Kirchhoff, state archt., Madison, vocational school at Reformatory, $750,000.

Newfoundland, St. John's—UNIVERSITY BLDG.—Dpt. Educ., St. John's, university bldg. at Halidays Farm, northern suburbs of city, $1,000,000. S. J. Hefferton, minister, c/o owner. CD 8/19/49.

COMMERCIAL BUILDINGS

Ga., Atlanta—HEALTH—Spelman College, Ella St., health bldg., $450,000.

(Continued on page 120)



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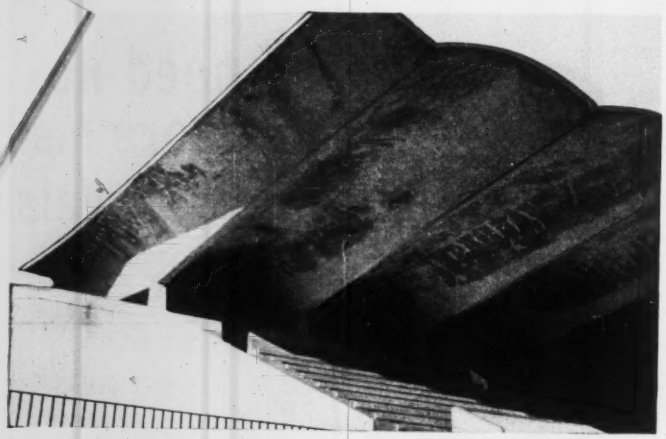

In this shell-concrete roof, each scallop serves as a beam, permitting a 42' cantilever over spectator stands.

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Although the specific gravity of concrete is comparable to aluminum, the U.S. annually uses many more tons of concrete than of all iron, steel, lead, zinc, copper, aluminum and other metals, all brick, lumber, tile and glass combined.

Equally remarkable, concrete is poured in many batches, each composed of innumerable particles of aggregate and cement. Yet architects and engineers depend on it to produce homogeneous structures, *which it does, provided all batches have been properly and completely mixed.*

This is why the ready-mixed concrete industry sets exacting standards for mixer design, and certifies to you that truck mixers and agitators, built to those standards, have the proper design, capacity, drum speed and mixing action and the accuracy of water control required to produce a homogeneous concrete of uniform strength.

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THE JAEGER MACHINE COMPANY Columbus, Ohio
THE T. L. SMITH COMPANY Milwaukee, Wis.
WORTHINGTON PUMP & MACHINERY CORP. Dunellen, N.J.

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(Continued from page 118)

▲ **Ill., Arlington Heights**—SHOPPING CENTER—John Lindstrom, Inc., 705 Beverly Lane, Arlington Heights, plans by Mittlebusher & Tourtelot, 36 S. State St., Chicago, shopping center, on 13-acre site. **$2,000,000.**

Ind., Marion — DORMITORY — Marion College, Marion men's dormitory at college, **$400,000.**

Ind., Richmond—OFFICE ADDNS., etc.—Insurance Co. of North America, 1600 Arch St., Phila., Pa., office bldg. addns., alterations, **$400,000.** Day & Zimmerman, 1700 Sansome St., Phila., Pa., consult. engrs.

▲ **Minn., Minneapolis**—SHOPPING CENTER—The Dayton Co., D. C. Dayton, pres., Nicollet Ave. between 7 and 8 Sts., plans by Victor Gruen, archt., 8460 Santa Monica Blvd., Hollywood, Calif., Larson & McLaren, resident archts., 1901 Foshay Tower, Minneapolis, suburban shopping center, incl. 2 and 3 story, bsmnt., 175,000 sq. ft. department store, 50 stores and shops, parking facilities, water supply and sewage disposal sys. to serve business and residential bldgs., 66 St. and France Ave. south (Edina-Richfield), $7,000,000.

Neb., Omaha—REMODEL BLDG.—Nebraska Clothing Co., 15 and Farnam Sts., remodel entire bldg. **$693,334.** J. T. Allan, Brandeis Theatre Bldg., consult. engr.

▲ **N. Y., Forest Hills**—APARTMENT—Samuel Lefrak, 97-27, 64 Rd., plans by George Miller, 19 W. 44 St., New York, Zone 18, 6 story apartment, Yellowstone Blvd. between Burns and Clyde Sts. **$1,000,000.**

▲ **N. Y., Greenburgh**—OFFICE BLDGS.—Union Carbide & Carbon Corp., 30 E. 42 St., New York, Zone 17, 2 story office bldgs. on 286 acre tract near Elmsford. **$12,500,000-$17,000,000.**

▲ **N. C., Charlotte**—DEPARTMENT STORE—Belk Bros. Co., 115 E. Trade St., plans by A. G. Odell, Jr. & Assoc., 109 W. 3 St., department store addn. **$3,000,000.**

▲ **O., Cincinnati**—OFFICE—Robert H. Wachendorf, 1710 Section Rd., plans by Luigi Marioni, 825 Delta Ave., office, bowling emporium, Losantiville Rd. **$1,000,000.**

Tex., Bryan—HOUSING—J. C. Culpepper & Assoc., College Station, plans by Milam & Roper, 368 Casa Linda Plaza, Dallas, 60 frame cedar shake dwellings, concrete slab fdn., **$475,000**; 50 cedar shake, brick trim dwellings, **$390,000.**

▲ **Tex., College Station**—HOUSING, etc.—J. C. Culpepper & Assoc., College Station, plans by Milam & Roper, 368 Casa Linda Plaza, Dallas, 75 frame, cedar shake, brick single and duplex dwellings, **$562,500**; shopping center, **$5,000,000.** Hare & Hare, 114 W. 10 St., Kansas City, Mo., consult. engrs.

▲ **Tex., Fort Worth**—SHOPPING CENTER—Edgewood Terrace Building Corp., c/o L. W. Beavn, Jr., pres., Fair Bldg., plans by J. H. Williams Co., c/o owner, masonry, steel, concrete shopping center, in 4700 blk E. Lancaster St. **$1,000,000.**

▲ **Tex., Fort Worth**—STORES—W. T. Grant Co., Main and Capitol Sts., Houston, unit of retail stores. **$1,000,000.**

Tex., Houston—CHURCH—First Christian Church Congregation, Main and Bell Sts., church, near Rice Institute. **$750,000.**

▲ **Tex., Odessa** — OFFICE — Phillips Petroleum Co., Bartlesville, Okla., and Ben Nedow, c/o Radio Station KECK, Odessa, plans by Wyatt C. Hedrick, engr.-archt., 1005 First Natl. Bank Bldg., Fort Worth, 10 story office. **$1,000,000.** CD 6/23.

Tex., Pasadena—COMMERCIAL—Jeff Fleming & Assoc., Pasadena, masonry commercial bldg., Shaw Ave. **$400,000.**

▲ **Tex., San Antonio**—DWELLINGS—**Mercury** Building Co., c/o Walter Steves, 704 E. Commerce St., plans by Cerf Ross Associates, 111 Auditorium Circle, Job. 1, 40 frame dwellings, **$300,000**; Job 2, 55 two and three bed-room frame dwellings, **$422,500**; Job 3, 45 three-bedroom frame dwellings, **$560,000**; Job 4, 72 two-bedroom frame dwellings, concrete slab fdn., **$560,000**, in area off W. W. White Rd.

▲ **Va., Arlington**—HOUSES—Libby Bros. Constr. Co., Towers Bldg., Wash., D. C. plans by Joseph H. Saunders, Jr., 121 S. Colmbs St., Alexandria, 800 two story brick, concrete masonry row type houses, **$8,000,000.**

Wash., Seattle—OFFICE—J. Graham Jr., Dexter Horton Bldg., Zone 4, office bldg. **$580,000.**

Wash., Seattle—SCHOOL ADDN., etc.—St. Edward's Parish, 4213 Orcas St., school and convent addns. **$425,000.**

Wash., Seattle—STORE—Stimson Realty Co., 1411 4 Ave. Bldg., Zone 1, store, **$540,000.**

▲ **Alaska, Ketchikan** — APARTMENT — Wingren Court Apartments, Inc., Ketchikan, plans by E. W. Morrison & Assoc., 719 2nd Ave. Bldg., Seattle, Wash., 11 story, rein.-con. apartment, **$1,500,000.** CD 6/11.

▲ **Ont., Cooksville**—HOUSING—Unnamed Syndicate, c/o G .M. Harris, realtor, Cooksville, housing, 700 homes on 330 acre site. **$10,500,000.**

▲ **Ont., Levack**—HOUSING—International Nickel Co. of Canada Ltd., Copper Cliff, Ont., housing, incl. 85 dwelling units, school extension, services and streets, **$1,200,000.**

Ont., Ottawa—HOSPITAL—Salvation Army, Wellington St., 3 story, bsmnt., 41-bed and 48 cubicles—Grace Hospital addn., Wellington St. **$490,000.** CD 5/28/46.

INDUSTRIAL BUILDINGS

Ala., Birmingham—PLANT—Birmingham Paper Co., c/o Shaw & Renneker, archt., 2021 6 Ave. N., plant addns., remodeling. **$500,000.** CD 5/9.

Ala., Mobile—PLANT—Ideal Cement Co., 256 N. Joacham St., plant addns. $600,000.

▲ Ala., Sheffield—PLANT—Associated Cooperatives Inc., Sheffield, plant addns. $1,300,000.

▲ Calif., Buena Park—PLANT—U. S. Electrical Motors Inc., Buena Park, plans by Marsh, Smith & Powell, 208 W. 8 St., Los Angeles, motor mfg. plant. $3,500,000. CD 11/14/51.

Del., Wilmington—LABORATORY—Hercules Powder Co., Delaware Trust Bldg., biological laboratory. $400,000.

Fla., Fort Lauderdale—PLANT—A. J. Horne, 2501 fertilizer plant. $500,000.

▲ Fla., Panama City—PLANT—International Paper Co., Panama City, plant addns. $1,300,000.

▲ Ill., Lincolnwood—WAREHOUSE—Chicago Musical Instrument Co., 30 E. Adams St., Chicago, Zone 3, plans by Fugard, Burt, Wilkinson & Orth, 520 N. Michigan Ave., Chicago, Zone 11, 1 story, part bsmnt., penthouse, warehouse with office, N. Cicero Ave., $1,000,000.

Ind., Bedford—FACTORY, etc.—General Motors Corp., Fabricast Div., Bedford, Ind., plans by Allen & Kelly, architects & Builders Bldg., Indianapolis, Zone 4, 1 and 2 story, 240x400 ft., brick, steel, rein.-con. factory and office bldg., $900,000.

▲ Kan., Great Bend—POWER PLANT—Western Light & Telephone Co., Huron Bldg., Kansas City, Kan., power plant, $3,000,000, Sargent & Lundy, 140 S. Dearborn St., Chicago 3, Ill., consult engrs. CD 11/13/51.

▲ Minn., St. Paul Park—TOPPING PLANT UNIT—Northwestern Refining Co., E. R. Erickson, exec. vice pres., St. Paul Park, oil refining topping unit, auxiliaries. $2,500,000.

▲ O., Chillicothe—PLANT—Mead Corp., B and Mulberry Sts., paper finishing and warehouse bldg., 9 St. from Madeira and Mulberry Aves. $2,500,000.

▲ O., Youngstown—FACTORY—Metal Carbides Corp., R. T. Beeghly, genl. mgr., 107 E. Indianola Ave., 1 story, approx. 50,000 sq. ft. brick, steel factory, to produce tungsten carbide and other special alloys, Mathews Rd. and Southern Blvd. in nearby Boardman. $1,000,000.

▲ S. C., Georgetown—PLANT—International Paper Co., Georgetown, plant addns. $2,000,000.

S. C., Williamston—MILL—Textron, Inc., 20 Market Sq., Providence, R. I., mill addns. Approx. $500,000.

Tenn., Kingsport—PLANT—Blue Ridge Glass Corp., Kingsport, plant addn. $500,000.

Tenn., Kingsport—PLANT—Penn-Dixie Cement Corp., Kingsport, plant addns. $500,000.

▲ Tenn., Nashville—PLANT—E. L. Bruce Co., 5400 Centennial Blvd., plant addn. $1,000,000.

▲ Tex., Paris—POWER PLANT—Texas Power & Light Co., Interurban Bldg., Dallas, power plant and facilities. $12,650,000. CD 3/13.

▲ Va., Franconia—STORAGE WAREHOUSES—Parr Warehouse Corp., No. 1 Drumm St., San Francisco, Calif., plans by Ward & Bolles, 215 Leidisdorff St., San Francisco, Calif., 1 story, 1,250,000 sq. ft. storage warehouses, for lease to General Services Admin., Wash., D. C. $5,000,000-$7,000,000.

▲ Va., Norfolk—REFINERY—Esso Standard Oil Co., 8201 Hampton Blvd., oil refinery. $50,000,000.

▲ Va., Norfolk—SERVICE CENTER—Virginia Electric & Power Co., Boush and Bute Sts., plans by T. David Fitz-Gibbon, Royster bldg., 1 and 2 story, 68,000 sq. ft. concrete and steel service center, incl. transformer and electric shop and garage bldg. $1,000,000. Joe H. Berry, c/o owner, dist. mgr.

▲ W. Va., Huntington—ELECTRIC FURNACE, etc.—West Virginia Steel & Mfg. Co., sub. Summer & Co., 555 Buttles St., Columbus, O., 30 ton electric furnace, 28-in. blooming mill and plant buildings, to produce steel billets. $3,250,000.

UNCLASSIFIED

Ga., Columbus—T.V. STATION—Radio Columbus, Inc., Station WDAK, Martin Bldg., TV station. $300,000.

Ga., Gainesville—GAS SYSTEM—Georgia Gas Co., Gainesville, natural gas system addns. $300,000.

▲ O., Toledo—IRON ORE UNLOADERS—Lakefront Dock & Railroad Terminal Co., Bay Shore and Otter Creek Rd., install two Hulett iron ore unloaders with capacity of 1,500 tons an hour each. $3,000,000.

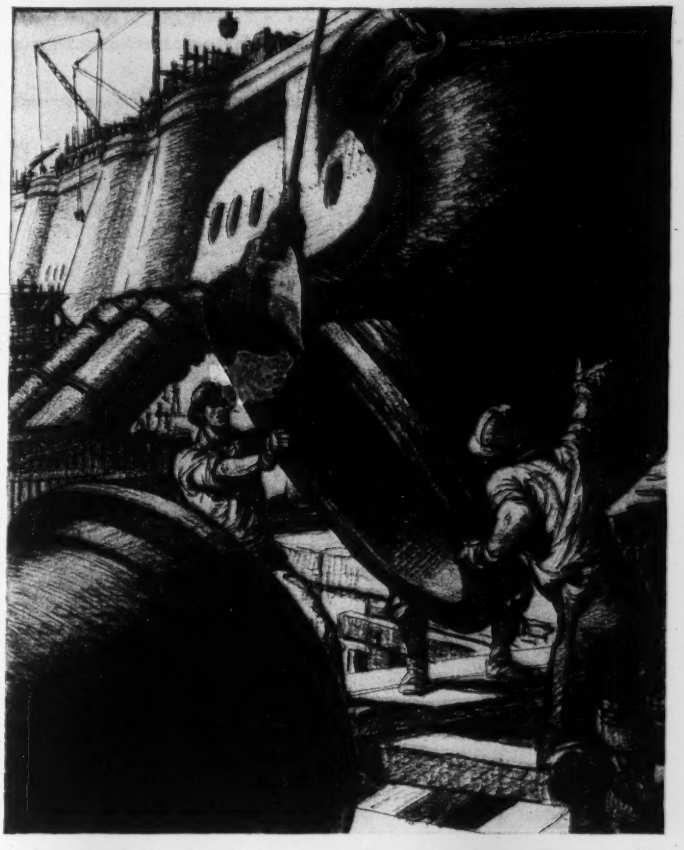
▲† S. C., Charleston—BUILDINGS, etc.—P. Wks. Office, Dpt. Navy, Box 365, Naval Base, Charleston, electronic bldg., $5,200,000; battery overhaul shop, $1,100,000; steam and electric services for piers, $166,000; overhaul electric sys., $486,000; all foregoing at Charleston Naval Shipyard. CD 7/15/49.

▲ Tex., Denison—LODGE, CABINS, etc.—Texas State Park Bd., c/o Planning Dpt., State Bldg., Austin, plans by Donald L. Mayes, Denison, 112-room lodge or hotel, $750,000; construct 15 triplex cabins, $350,000, both at Eisenhower State Park in Lake Texoma Area. CD 12/21.

Tex., San Antonio—SWIMMING POOLS—Bexar Co., Court House, rein.-con. outdoor County Swimming Pools, Precincts 1, 2, 3 and 4. $250,000 each. L. White, co. engr.

Ont., Toronto—TRANSMISSION LINE—Hydro-Electric Power Comm. of Ontario, 620 University Ave., electric power transmission line and towers along railway tracks in Moore Park area. $500,000.

▲ Que., Quebec City—TRANSMITTER STATION—C.B.C., 1425 W. Dorchester St., Montreal, transmitter station for television. $1,000,000. D. G. McKinstry, c/o owner, engr.



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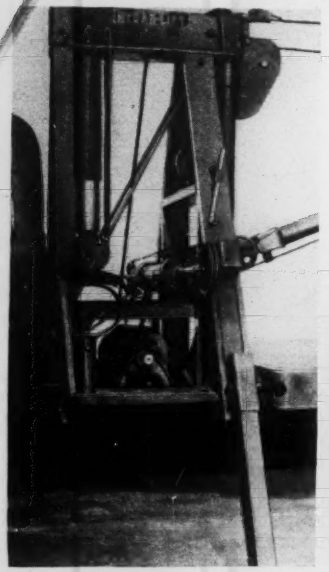
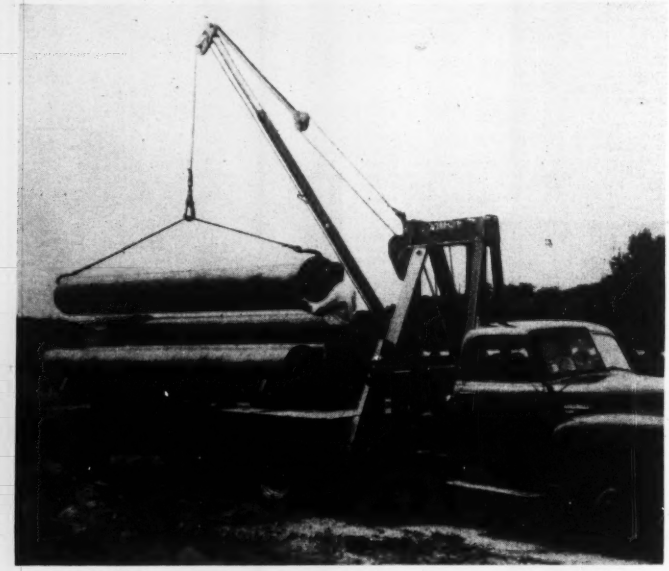




Hydra-lift fits any truck 1½ tons or larger

Late in 1950 the original Hydra-Lift appeared—a versatile, inexpensive crane built to fit on a truck chassis. The new improvement on the original —Model B—features a variety of improvements. Chief among these are (1) an increase in the unit's safety margin and (2) the fact that it's now shipped almost completely assembled.

Requiring only 40 in. behind the truck cab, its boom swings through 180 deg, lifts through an arc of 100 deg and telescopes from 12 to 17 to 22 ft. Simple lever controls can be installed inside the cab or outside. The truck motor is the basic source of power, which is transferred to a power take-off and through two underdrive connections to a hydraulic pump and a winch.

This pump supplies two hydraulic cylinders; one is vertical, single-acting, and actuates a cable to raise or lower the boom; the second is horizontal, double-acting, to swing the boom. The winch powers the cable that raises and lowers the load. For maximum capacity loads the winch must be used, although on lighter jobs movement may be forced by booming up or extending with the load line held fast. The hydraulic pump is Vickers, vane-type, delivering 7½ gpm at 1,500 psi. In case of engine failure and resultant stopping of pump pressure, the boom locks and cannot be lowered or swung. PITMAN MANUFACTURING COMPANY, 300 WEST 79TH TERRACE, KANSAS CITY 5, MISSOURI.

Rolling aluminum towers save scaffold costs

Aluminum is in the construction equipment and materials market again, this time in form of a rolling scaffold tower. The tower has no nuts, bolts or loose parts and it folds to a compact unit 6½ in thick weighing only 64 lb. One man can carry it and erect it in two or three minutes. The single tower section is 4½ ft wide by 6 ft long by 6 ft high. Adjustable by means of screw jack bases to 8 ft, affording a working platform of 27 square feet. THE ALUMINUM ASSOCIATION, 420 LEXINGTON AVE., NEW YORK 17, NEW YORK.

Air content in concrete measured by indicator

An entrained air indicator, designed for fast and accurate determinations of entrained air content in freshly mixed concrete, has been developed recently. The amount of entrained air required in a mix is usually between 3 and 6 per cent of the volume of concrete, but this will vary under special conditions. The Cenco indicator tests concrete samples by the pressure method. A recent survey of fourteen experimental highway sections shows that air-entrained concrete stands up very well through winter exposure and use of ice-removing chemical. The company reports that currently thirty of the forty-eight states require use of air-entrained concrete in all pavements. CENTRAL SCIENTIFIC COMPANY, CHICAGO, ILL.

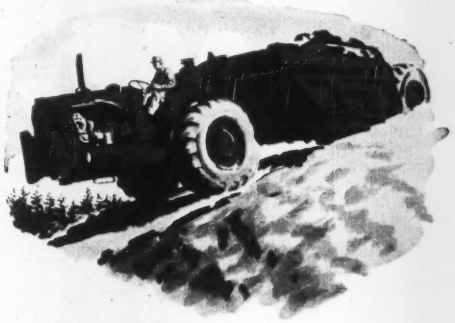
Concrete cylinders tested with portable unit

To meet the demand of compression testing of standard 6 x 12-in. and 8 x 16-in. concrete cylinder specimens on the job, a compact, portable unit is now available. A specimen is placed between two compression surfaces, the upper of which is self-aligning to assure accuracy. A hand piston pump supplies the pressure with loads indicated on a gage with maximum load pointer. TINIUS OLSEN TESTING MACHINE COMPANY, 1196 EASTON ROAD, WILLOW GROVE, PENNSYLVANIA.

("New Products" continued on p. 124)

Men who depend on power...know they can depend on CUMMINS®

Every CUMMINS DIESEL is built not once but twice



Construction men in the field have learned to count on Cummins Diesels for dependable power day in, day out.

What's behind this consistent reliability? One good reason is the fact that every Cummins Diesel is actually built *twice*. After initial assembly, and run-in testing, every engine is disassembled, inspected; then reassembled and tested again.

This extra care—together with Cummins' economy-proved fuel system and efficient parts and service organization—makes lightweight, high-speed (50-550 h.p.) Cummins Diesels a wise first choice *for men who depend on power*.

Whatever your power needs . . . whether it's for earthmoving, portable power units or generator sets . . . or any other important jobs . . . your Cummins dealer is the man to see.

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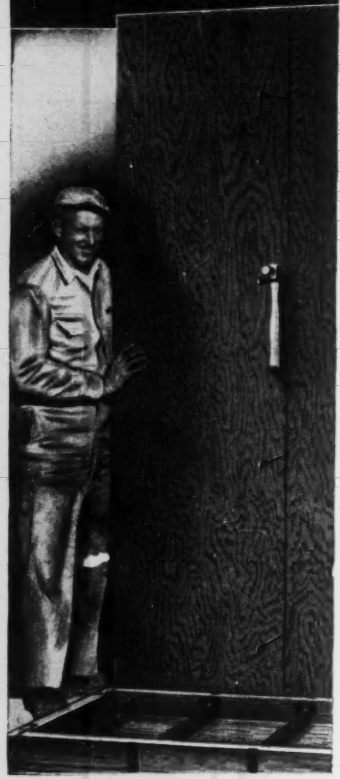

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Clay digger is interchangeable

Contractors' demands on tools vary, necessarily, from job to job. Knowing this only too well, the manufacturers of the Thor No. 16 pneumatic clay digger shown here sent their newly developed tool into the field three years ago and let a host of tunneling contractors try it out. A conflict of demands and suggestions resulting from these tests was solved by incorporating, as much as possible, all the requirements into one new tool.

Users are offered a choice of inside or outside trigger; closed or latch type retainer; any of five chuck sizes—all built to interchangeably fit one cylinder assembly. What's more, the latch type retainer is also interchangeable on Thor's No. 17 paving breaker and the No. 18 clay digger as well. The new tool incorporates an air-cooling system which circulates exhaust air through the front head for cooler handling, at the same time blowing muck and dirt from retainer parts. A graduated throttle valve permits operation at fast or slow speeds. The No. 16 weighs only 20 lb, and the photo shows its apparent ease of handling. Only 19½ inches long, it's equipped standard with a chuck that takes steels ¾ in square with 2¾-in shank; optional chucks can take ¾ hex, 2¾ shank; ⅞ hex with 2¾ or 3¼ shank; combination .882 hex, and 1.027 round with 3¼ shank. Accessories in the same shank sizes include clay spades or scoops, flat picks, saw tooth chisels, moil points, narrow chisels and chisel blanks. INDEPENDENT PNEUMATIC TOOL COMPANY, AURORA, ILLINOIS.

New rubber powder for paving work coming

A new form of rubber powder for use where it is desired to add small quantities of rubber to asphalt paving mixes is to be put on the market next year by Goodyear in co-operation with the Berry Asphalt Co. of Magnolia, Ark. The powder is made by co-precipitation of a synthetic rubber with a mineral filler of finely ground barytes. Two compounds are available, one containing 10% rubber and one with 30% rubber and 70% filler. Cost figures will not be available until next year.

The new powder is free-flowing and is said to disperse more rapidly in an asphalt mix than do the pure rubber powders used heretofore (ENR Dec 7 '50 p 34). Test installations using it have been made on Madison Avenue in Kansas City and on Pike Avenue in North Little Rock, Arkansas. The Goodyear and Berry companies have also co-operated in development of an improved pelletized rubber for surfacing of playground, walks and bridge floors. The pellets are about ¼-in. in diameter and both natural and synthetic rubbers are used.

Normally the pellets are applied to the playground surfacing at a rate of 5 to 7 lb per sq yd, being spread following the application of an asphalt emulsion. Where maximum cushioning is required, as under playground equipment, the amount can be increased to 10 to 12 lb per sq yd; the surface is then compacted with conventional rolling equipment. Costs run around $1.60 per sq yd for the rubber surfacing. THE GOODYEAR TIRE & RUBBER CO., AKRON, OHIO.

Twin spark arrester-silencer developed for GM diesels

A new twin silencer-spark arrester has been built for use on General Motors 6-71 twin or quad power plants. The new 1244-HCT4 model utilizes two Kittell horizontal spark-arrester-silencers welded together and provided with offset intake nipples to match the

(*Continued on page 127*)

BIGGER PAYLOADS with 3-6 Yard Trucks

using

Gar Wood

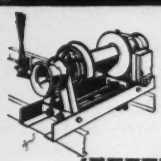
MS1 DUMP BODIES and D8R HOISTS

Gar Wood D8R Hoist and MS1 Body get maximum payload from 3- to 6-yd. trucks because they make it unnecessary to adapt a heavy duty hoist and body (that weigh more and cost more) for these smaller trucks in the heavy duty class.

Gar Wood MS1 Bodies are built for long satisfactory life under tough operating conditions. Liberal use of V- and box-type bracing and stiffening members assures utmost in strength with minimum weight. Because of improved D8R Hoist design, the lifting point is placed farther forward which substantially reduces danger of bending body longitudinals.

There are other Gar Wood medium duty and heavy duty dump bodies and hoists to meet different operating conditions. Write for descriptive bulletin . . . use the coupon below—today.

Gar Wood Load Packer compresses a bigger load of refuse—reduces collection costs. Bulletin M60.



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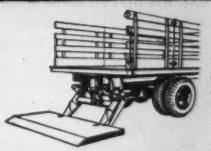

Gar Wood Elevating End-Gate cuts pick up and delivery costs. Bulletin L-101.

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☐ Load-Packer Bulletin M60 ☐ Winch Bulletin WC-204

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NEW PRODUCTS

twin exhaust manifolds of the GM diesel. As exhaust gases enter these intake nipples, they're whirled by a stationary impeller and the sparks are thrown by centrifugal force into traps. Exterior plugs permit easy periodic cleaning. Gases then pass through the silencing compartment into the atmosphere. The twin unit is all-welded and ready to mount. As an alternate choice a twin standard exhaust silencer is available without spark arrester. KITTELL MUFFLER AND ENGINEERING CO., 915 S. SANTA FE AVE., LOS ANGELES 21, CALIFORNIA.

Stockpile windrow-loader introduced by Athey

The rig coming at you in the picture above is an Athey Force-Feed Hi-Loader, loading berm into a truck in Tippecanoe County, Indiana, as part of a series of demonstrations by MacAllister Machinery Co. of Indianapolis. Perhaps the outstanding feature of the machine is its full-floating feeder, suspended from two coil springs and a pivot, which allows the paddle blades to float over the contours of the windrow. A new auger gather-feeder speeds loading from stockpiles and wide windrows. Spiral blades extend to the moldboards of the gather and feed in a steady flow of materials to the blades.

The 30-in. conveyor belt is cleated to handle snow, sand, earth, rock, etc. A swiveling discharge conveyor swings 45 deg right or left of center, hydraulically controlled by the operator, whose platform is on the left side for travel and unobstructed visibility. All operations are controlled from his seat. Power comes from a Ford, 95-hp, 6-cylinder engine which can travel at speeds up to 19 mph. Loading speeds run from 0.3 to 1.92 mph. The rig is 34 ft, 7 in long, but its short wheelbase permits a turn in only 23 feet. ATHEY PRODUCTS CORPORATION, 5631 W. 65TH STREET, CHICAGO 38, ILL.

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EDITORIALS

Self-help gets results

THE LESSON behind the achievement of the newly-formed Concrete Industry Board in New York (ENR July 3, p.101) is one that all segments of the construction industry can take to heart.

The lesson divides into two parts: When any part of the industry undertakes to clean its own house, it can do a far better job than any outside agency; unity—and results—can be obtained through the exercise of common sense.

Like most problems, the initial trouble seemed simple—ready-mixed concrete quality was poor. Correcting the trouble, however, promised considerable difficulties.

But CIB was formed, and it attacked the problem in a practical, businesslike manner: It assessed the trouble, and proceeded to see what could be done. It called in everyone concerned—the architects and engineers, the contractors and their subs, the ready-mix people and the laboratories that make the tests. And by simply getting these people together—all of whom wanted to solve the ready-mix problem—it got results in the form of better concrete, largely because an atmsophere of fair intent was created and maintained.

Here is a formula that any section of the industry faced with a knotty problem can apply with a good chance of success.

What price prestressed concrete?

THE EXPERIMENTAL PROJECT set up by the Massachusetts Department of Public Works to gain experience with different methods of prestressing concrete and to determine their relative costs is deserving of high praise. The project involves four bridges, each designed to be prestressed by a different method (ENR July 3, p.103), and all contracted to a single builder on competitive bids.

This procedure will undoubtedly afford the opportunity to gain first-hand experience with all four methods. On the other hand, determination of relative costs will not be simple, for the bridges have different spans, and the longest one carries a heavier load than the others. If cost information had been the sole consideration, the department probably would have attained its objective more easily by taking bids on four alternative designs for a single structure.

Nevertheless, the bid prices offer some clues to what the various methods cost. Beams for three of the bridges were designed for the same loading and have identical cross-sections. Cost per cubic yard for these beams may be compared to determine their relative cost, for the cost of prestressing is the principal variable. The result of this comparison is particularly significant since the method with the lowest cost per cubic yard is the one used for the longest span in this group.

The fourth bridge, however, with beams that are deeper and heavier than the others, introduces other variables and so can hardly be compared with them on a cost per cubic yard basis. Some estimators recommend that a comparison be based on cost per cubic yard of concrete per kip of initial tension in the steel. This would reflect, in their opinion, the effect of prestressing steel on the cost—an effect far greater than that of reinforcing steel on the cost of a conventional concrete beam.

In any event, the Massachusetts experiment is bound to be useful. The open-minded approach taken to the problem of introducing a new method of construction involving patented devices is worthy of emulation. And the cost figures that are provided—both in the presently available bids and in the final results that must await completion of the bridges—will fill a real need.

Prestressed concrete has been demonstrated to be safe and reliable. The biggest barriers to its greater use appear to be lack of experience and a shortage of cost data. This experimental project in Massachusetts should help to remove these barriers.

Safety on public work

PUBLIC CONSTRUCTION OPERATIONS are lagging far behind private work in accident prevention, according to the findings of a survey by the National Safety Council (ENR June 19, p35). That such a situation should exist, for example, in state highway departments, which are supposed to be especially conscious of the need for greater driving safety on their highways, is hard to understand. Possibly it is because the departments most directly concerned with traffic accidents—police and design—have little direct contact with the day-to-day operations of the construction and maintenance departments, where accident frequency is normally quite high.

Here is a matter that should be of concern to the heads of all state highway departments not having functioning safety programs. Possibly it is one that might be headed up in the American Association of State Highway Officials. The Construction Section of the National Safety Council and the Associated General Contractors of America can be of material help in setting up safety programs. The latter organization recently reissued its Manual of Accident Prevention on Construction in fourteen pocket-sized pamphlets, each pamphlet covering closely related subjects. Several of these cover subjects that are certainly of direct interest to highway maintenance and construction operations.

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DRIVING FOUNDATION PILES for the gated portion of Morganza, La., Floodway Control Structure is one of the outstanding pile jobs of the year. Skilled planning of operations and use of two of the largest pile drivers ever built have enabled Raymond to complete this work three months ahead of schedule. Structure is supported on 3,734 precast concrete piles 80 to 118 feet in length—practically all driven on a batter.

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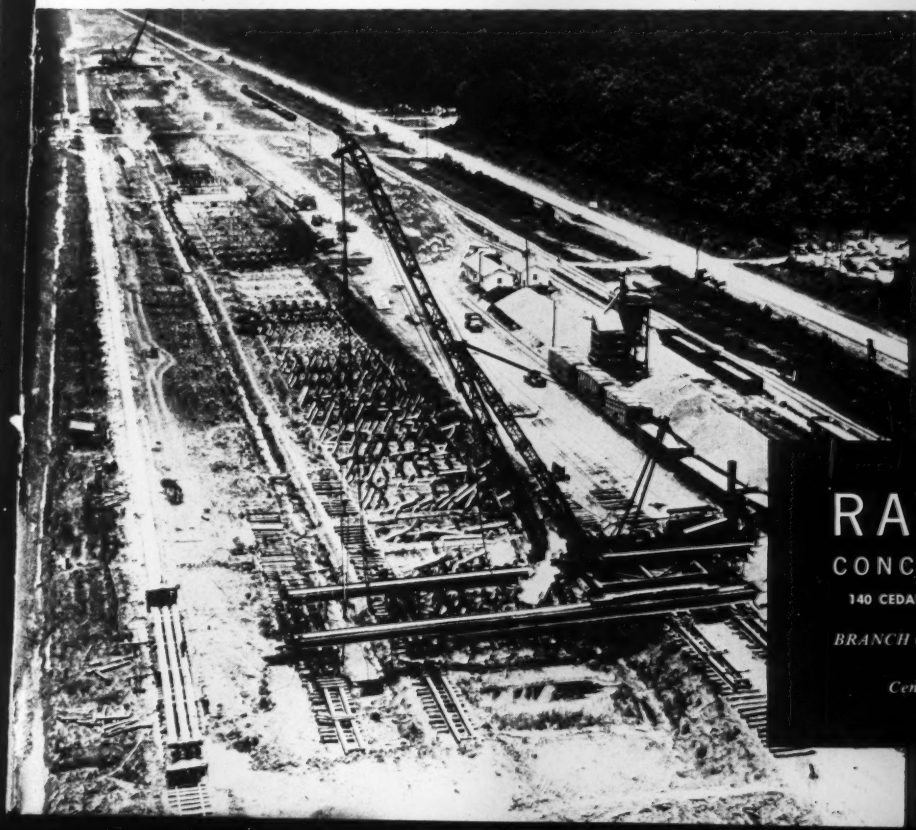

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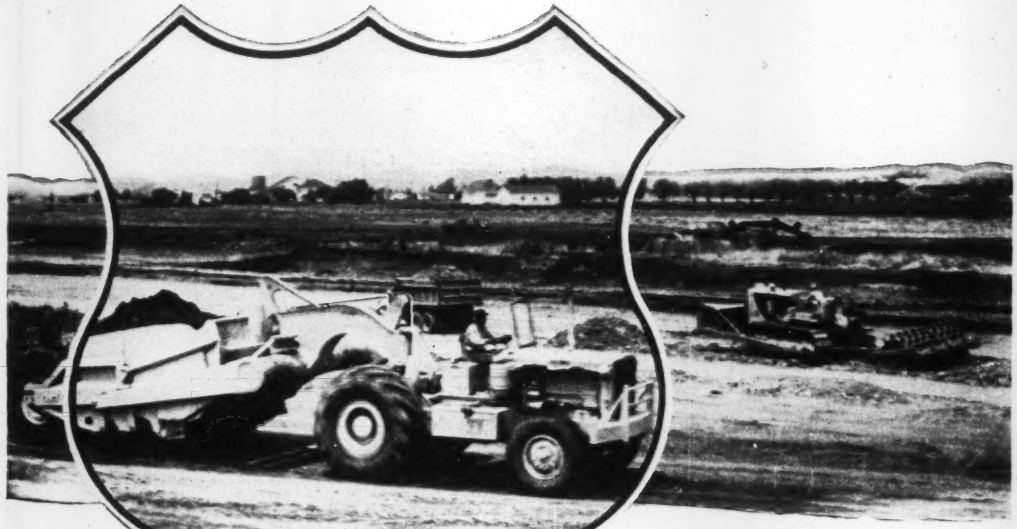

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